

American Aviation

The Independent Voice of American Aeronautics

APRIL 15, 1947

No Time for Panic

MR. CARLETON PUTNAM has made out quite a good case for the secondary airlines of the country in their fight against CAB-sponsored "shot-gun" weddings. What the president of Chicago and Southern Air Lines had to say should be thoroughly pondered by the CAB before it makes drastic moves to eliminate most of the smaller carriers.

Fortnightly Review

ever actions it may take.

Even Mr. Putnam will recognize that the present route structure has its weaknesses, that certain adjustments through sales or mergers will make for a more healthy industry and for more efficient service to the public. But it would be disastrous to the nation if the Board suddenly decides that all small airlines are costly nuisances and should be carved up or forced to merge into a half-dozen big companies.

If some of the secondary carriers are in financial straits, the Board has only itself to thank, for in the midst of the artificial circumstances of war it knocked out sustaining mail pay props and expected these airlines to continue to serve their territories in peacetime without any of the advantages of trunk line long-haul carriers.

The Board, too, approved certain extensions of small carriers paralleling trunk lines on heavy-traffic routes when it was obvious that the small carrier would be at a distinct disadvantage.

At the moment the Board is in an embarrassing spot when it comes to investigating the current financial conditions of some smaller carriers, for it has been awarding feeder routes with considerable generosity over the country and setting mail pay at 35c a mile when the older small carriers would be extremely pleased to get a similar rate.

The secondary carriers have been a good investment for the country. Some of them, it is true, got ambitious to become big companies over-night, and some of them were unwise in seeking route expansions out of their element. But as Mr. Putnam said in his Washington speech, a very substantial number of technical developments (many of them resulting in savings to the entire industry) have come out of the smaller carriers.

(Turn to page 6)



Sets Record With DC-6

W. E. "Slim" Larned, who recently was named assistant director of flight operations for United Air Lines, was at the controls when United's Douglas DC-6 established a new transcontinental speed record on March 29. Larned has been with United and its predecessors for more than 20 years. (See story on page 31).

In This Issue

Chosen Instrument Issue

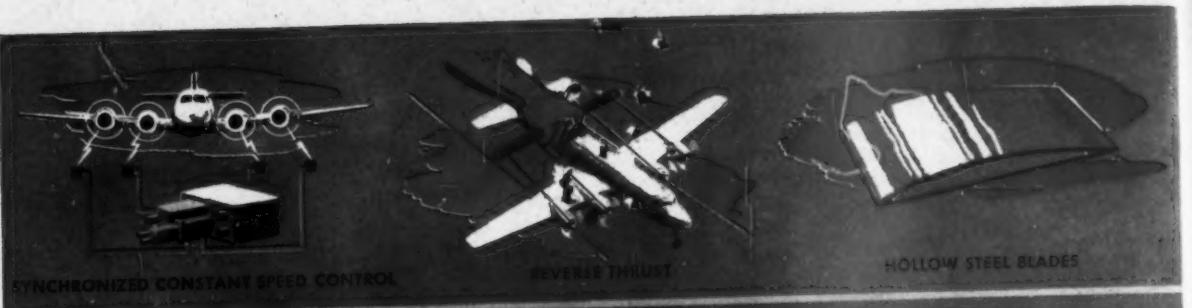
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To Economy 26



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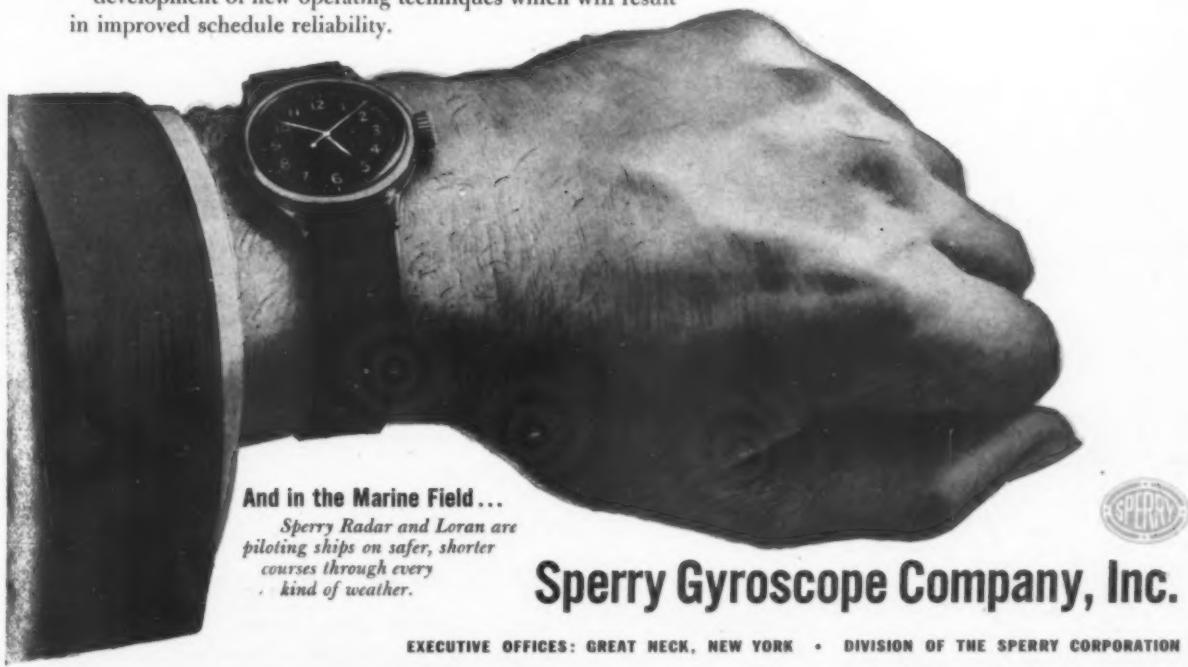
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American Aviation

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April 15, 1947



Wayne W. Parrish, Editor and Publisher



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Main Editorial and Business Offices:

American Building, 1317 F Street, N. W., Washington 4, D. C.
District 5735.

Chicago: 139 North Clark St., Chicago 2, Ill. State 2154.

Los Angeles: 1404-S Park Central Bldg., 412 West Sixth St., Los Angeles 14, Calif. Trinity 7997, Fred S. Hunter, Mgr.

Correspondents: James Stanton, London, England; R. N. Hughes, Jones, Melbourne, Australia; Leo White, Auckland, New Zealand; Douglas Clark, Buenos Aires; and correspondents in major European and Latin American Capitals.

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American Aviation Daily: The only daily news service for the aviation industry. Published daily except Saturdays, Sundays and holidays since 1939. Dispatched via airmail or surface mail for overnight delivery in the United States. Subscriptions: \$15 one month, \$170 one year. Airmail delivery to points outside the United States at additional cost to cover postage. Service Bureau available to all subscribers. CLIFFORD GUEST, Managing Editor.

International Aviation: A weekly newsletter of aviation trends and news in foreign countries. Published on Friday of each week and dispatched via first-class surface mail. Editorial representatives in foreign capitals. Subscriptions: \$100 one year (52 issues). Airmail delivery available at additional cost to cover postage. Service Bureau available to all subscribers. FRANK M. HOLZ, Managing Editor.

American Aviation Directory: Published twice a year, Spring and Fall. Complete reference data on administrative and operating personnel of airlines, aircraft and engine manufacturers, accessory and equipment manufacturers, organizations, schools, U. S. and foreign aviation groups and departments, etc. Completely cross-indexed by companies, activities, products and individuals. Single copy \$5.00. Fall-Winter 1946-47 issue now available. DAVID SHAWE, Managing Editor.

American Aviation Air Traffic Guide: Monthly publication of airline schedules, rates and regulations for passengers and cargo transportation by commercial air transport. Supplements for nighly subscribers covering changes occurring between issues. Subscriptions: U. S. and Latin America \$7.50 one year (10 issues and supplements); Canada \$8.00. All other countries \$9.00. Published and revised from editorial offices at 139 North Clark Street, Chicago 2, Illinois. (Telephone: State 2154). H. D. WHITNEY, Managing Editor.

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NEW VHF NAVIGATION

SYSTEM PROVED*

* First Demonstrations at Indianapolis
Successful in Fog and Snow Storm

On January 4-5, and again from January 20-23, a new VHF airborne receiving and indicating system, giving ADF type presentation, was successfully demonstrated in conjunction with the CAA's Omnidirectional Range at Indianapolis. The radio and instrumentation equipment was designed and built to specifications of Aeronautical Radio Inc. by the Collins Radio Company.

In full cooperation with commercial aviation in its untiring efforts to establish improved air navigation facilities, the Collins 51R system was speeded to completion by intensive engineering effort, and is the *first* of its type to be demonstrated. ARINC's Radio Equipment Committee and commercial airline engineers witnessed the earlier demonstration in the Collins flight research plane, a Beechcraft 18S. Fog and low-hanging clouds precluded any but instrument flying and provided ideal conditions for proving the effectiveness of the system.

The second demonstration was at the request of the Air Transport Association's Air Navigation Traffic Control Research Group for ATA members. The equipment was installed in ATA's experimental plane, a DC-3.

The Collins 51R Navigation System includes

a 280 channel receiver covering 108 mc to 136 mc in 100 kc steps and provides facilities for the following:

- a. Localizers, tone type (90/150 cycles), including flag alarm.
- b. Localizer, phase type, including flag alarm.
- c. Omnidirectional ranges, indicating on cross pointer meter, course chosen by manual course selector. Includes operation of ambiguity indicator and flag alarm.
- d. Omnidirectional ranges which, when automatically combined with magnetic heading information, provide automatic direction finding type of presentation in the cockpit.

The receiver utilizes the exclusive Collins Drift Cancelled Oscillator (DCO) circuit which provides extremely high stability and rejection of spurious signals. Two or more receivers can be operated with a single antenna.

These successful demonstrations are historic because they mark the first major step in the development of a complete, fully integrated system which will permit guided and controlled flight in any direction, on any track, to any point within the coverage of the basic radio facilities.

IN RADIO COMMUNICATIONS, IT'S . . .

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Editorial

(Continued from Page 1)

Each one has been, in a sense, a laboratory and the present high state of airline operations in the U. S. has come from not one, but from a whole network of these laboratories.

We think Mr. Putnam could have made an even stronger case for a secondary network, however, if he had mentioned the public service angle. The major trunk lines concentrate on high-density business between major traffic points. This is as it should be and a trunk line operator cannot be blamed too severely if he is reluctant to serve secondary stops when his operating efficiency is geared to high-density long-haul service.

But secondary communities—the smaller cities and the larger towns—have just as much right to frequent airline service as the metropolitan areas. A secondary airline will always give more attention to a secondary traffic stop than a trunk line operator. We know of as many as 16 flights a day at a medium-sized city on a secondary line and only 4 flights a day at a city of almost identical size and composition served by a trunk line.

The Board has a responsibility to see that smaller cities are well served. Undoubtedly the mail pay will have to be higher if secondary lines provide the service. It is not enough to say that trunk lines will provide the service less expensively for the bald fact is that the cities involved won't get the frequency of service they need.

The nation needs good and frequent trunk route service and it is getting this service now. But the nation needs a secondary service which feeder lines are not capable of performing and which major carriers are inclined to neglect. Three distinct classes of service are called for—trunk, secondary, and feeder.

Shot-gun weddings are not the answer, but readjusting route structures will do much to provide a balance in types of service. There is every reason to believe that Congress and the public will pay reasonable amounts to maintain these classes of service in the same way that the taxpayer in New York helps to provide RFD mail service to the isolated areas of Wyoming and Montana.

Echols and the AIA

THE AIRCRAFT Industries Association, the organization of aircraft manufacturers, is moving well into the peacetime era under capable leadership. From all appearances to date, the choice of Major General Oliver P. Echols as AIA president has been a very wise one. General Echols understands procurement problems as few in the country do, he is respected by the men he serves, and he would seem to be the ideal spokesman for an industry whose destiny is so deeply interwoven with the fabric of national security.

John E. P. Morgan, who has held the fort for some years with the understanding he could be relieved as soon as a permanent president was chosen, completed his work for the AIA in March. Quiet, soft-spoken Morgan was an able pinch-hitter and carved a niche for himself in aviation history for his leadership in gaining acceptance for the "grasshopper" lightplanes early in the war. In the same way that industry is confident of successful leadership by Echols, it is extending thanks to Morgan for stepping into AIA work at a difficult time and doing a good job.

Airport Common Sense

NOW THAT SOME semblance of realism is creeping into the economics of air transport operations and every town and hamlet in the nation is not being promised Stratocruiser service on hourly schedules, medium-size communities are in a position to measure their airport requirements with a keener judgment.

If one of the faults in airport planning 10 years ago was the failure to plan for expansion, one of the faults today is that medium-sized communities are over-planning for types of scheduled service which will probably never become available.

In short, some communities are failing to go forward with construction of airports simply because they are dreaming about super-airports which will require much financing and many years to build, and which are beyond their means to support. In nine out of 10 instances, such communities will find that airports capable, say, of handling DC-3 type aircraft, will be sufficient for their needs for many years to come.

The sensible approach for a medium-size community which did not benefit from military airport construction during the war, it seems to us, is to acquire sufficient ground for expansion if and when the need arises. But 10,000-foot runways are not needed today or ever for intermediate airline stops. Several communities we know about are stalling airport construction because their plans are too big for their pocketbooks. Meantime they are losing out on scheduled airline service which could be theirs if the construction plans were halved.

Use of Airports

ANY IMPRESSION that the scheduled airlines pre-dominate in the use of airports of the United States was dispelled by the summary of operations at the 25 leading airports carried in the March 15 *American Aviation*.

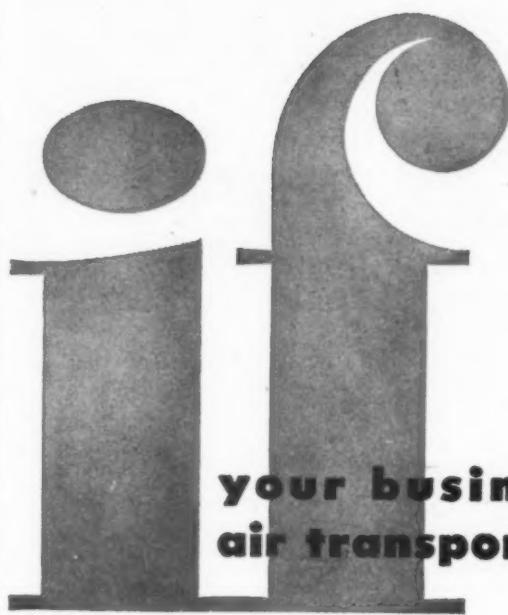
Out of the 4,162,917 landings and take-offs at the 25 airports, airlines accounted for 1,381,727—less than one-third. Only at such airports as LaGuardia in New York, Chicago Municipal, and Washington National, did airlines comprise over half of the operations. At such airports as Cleveland Municipal, airlines accounted for only one in eight or nine operations. If the average airline use is one in three at the 25 leading airports, the national ratio would be even more marked. The compilation proved that airports, like highways, are used by many classes of traffic.

Welcome!

When the railroads finally got around to issuing credit cards one would think that they had made a huge discovery and were pioneering something new. But the airlines can be very proud that they have led the way toward facilitating travel and that the rails have joined up. This is not the first time the railroads have adopted airline ideas. All of which goes to prove that competitive elements in transportation have benefits which accrue in the final analysis to the public. There's often a lot of screaming about competition, but it usually pays off.

WAYNE W. PARRISH

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Right now, L & S may be of immeasurable value to your operation. Because now Air Transportation's period of transition is shaping the leaders for tomorrow. Today's surprising profit and loss statements show that the "shakedown" is on. And it will soon determine who's ready and able for razor-sharp competition, with swifter ships, better cargo handling, added passenger convenience—all for a public waiting with new demands and uses for speed.

Today, your delicately balanced operation must function at top efficiency. And alert eyes must watch constantly for technical changes. Every dollar and man-hour you spend must return its full value if you're to be ready for the vast opportunities tomorrow will hold.

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Wings of Yesterday

25 Years Ago

Clifford Webster, in a Loening flying yacht with one passenger, flew from Palm Beach, Florida to New York in nine hours, 56 minutes flying time. One stop was made. (April 17, 1922.)

Twenty airplanes competed in the various races at the Spring flying meet at Curtiss Field, L. I., N. Y. held under the auspices of the Rotary Club of New York, the Aero Club of America, the Aeronautical Chamber of Commerce and the Curtiss Aeroplane and Motor Corp. (April 30, 1922.)

15 Years Ago

Marcel Goulette and Jean Salel flew from Paris, France to Cape Town, South Africa in 3 days, 18 hours, 15 minutes. The flight was made in a Farman 190 equipped with a Lorraine motor. (April 17-20, 1932.)

"Graf Zeppelin" flew from Friedrichshafen, Germany to Pernambuco, Brazil and returned. (April 18-27, 1932.)

C. W. A. Scott flew from Lympne, England to Port Darwin, Australia, in eight days, 20 hours, 47 minutes, establishing a new record. He flew a De Havilland Moth equipped with a De

Havilland Gipsy II motor. (April 19-28, 1932.)

The Cheney Award was presented to Private John B. Smith, and posthumously to Lt. Robert D. Moor of the Army Air Corps. (April 22, 1932.)

Louis T. Reichers flew non-stop from Montreal, Canada, to Havana, Cuba in 9 hours, 3 minutes. He flew a Lockheed Altair, equipped with a Wright Cyclone motor. (April 28, 1932.)

Letters

One Co-Pilot to Another

To the Editor:

I have noticed the anonymous letter signed "An Airline Co-pilot" in the April 1, 1947 issue of your magazine, which is so far off the beam that it cannot go unanswered.

As another co-pilot, I would like to put your anonymous co-pilot straight on a few things.

In the first place, I don't believe the letter was actually written by a co-pilot but by a company official designed to cause disruption in the ranks of the Air Line Pilots Association. About the only thing correct about Dave Behncke in it is that he spelled the name right.

The so-called revolt at the recent convention turned out to be little more than a dud. All of the co-pilots voted for Dave Behncke, with the exception of one or two delegates who were influenced by certain company-controlled first pilots.

ALPA has brought co-pilots' pay up from practically nothing to its present level. When Dave Behncke and ALPA started working, it was \$50 a month and flying hours were approaching 160 hours a month.

Anyone, who has any knowledge of ALPA and Behncke whatsoever, knows they have always leaned over toward the co-pilots and the greatest proportion of gains in salaries and working conditions have benefited co-pilots.

Although most first pilots haven't had an actual raise since 1934, the co-pilots have gone up steadily during each cycle of negotiations.

The statement that co-pilots aren't allowed to criticize is another brazen fabrication, because you know, "Mr. An Airline Co-Pilot (?)" that co-pilots aren't criticized for talking but are continually encouraged to do so.

A REAL AIR LINE CO-PILOT.

Books

DIALS AND FLIGHT. By Assem Jordanoff. Published by Harper & Brothers. 359 pp. \$5.00.

In this book, one of the country's best informed and most prolific writers on aviation subjects turns his hand to a detailed and authoritative discussion of aviation instruments. The book is divided into four main sections—one each on flight instruments, engine instruments, navigation instruments and automatic pilots.

Using his favorite technique of combining words and pictures to tell a story, Jordanoff has sprinkled *Dials and Flight* with 72 full page half-tones and 200 line drawings, diagrams and charts. This volume is another valuable contribution to the advancement of aeronautical knowledge by the author of *The Man Behind the Flight*, *Aviation Dictionary*, and *Power and Flight*.

ONE DAMNED ISLAND AFTER ANOTHER. By Clive Howard and Joe Whitley. University of North Carolina Press, Chapel Hill. 392 pp. \$3.50.

This official "Saga of the Seventh Air Force," written by two ex-sergeants, tells the story of the AAF's part in the slow conquest of the Pacific in a narrative style as pungent as its extremely apt title.

No "brass hat" story, this book attempts to tell the story of the Seventh's Pacific campaign from Pearl Harbor to Tokyo from the point of view of the pilots, gunners, mechanics, clerks and aviation engineers whose courage, resourcefulness and lively sense of humor made it possible for them to "beat death and the lonely monotony of the loneliest theater in the world."

Anyone who reads this book will lay it down with a deeper respect for air power, and especially for the planes of the Seventh Air Force and the men who flew and serviced them.

Booklets

Practical questions on airport financing, forms of operation, leases, municipal responsibility, and types of airport administration are answered in *Municipal Airport Management*, by Dr. Leslie A. Bryan, director of the University of Illinois Institute of Aeronautics. This publication is the first of a series of bulletins to be published by the Institute, which functions also to provide flight training, academic instruction, management of the University airport, and aeronautical research. Publication offices are at 358 Administration Bldg., Urbana, Ill.

A comprehensive, well-done manual designed to aid airmen in the state of Louisiana has been prepared by the Aeronautics Division of the Louisiana Dept. of Public Works. Col. T. B. Herndon is chief of the division. Entitled *Louisiana Air Facilities*—1947, the 240-page booklet gives detailed airport data, including aerial views and maps, as well as general information of interest to aerial tourists.

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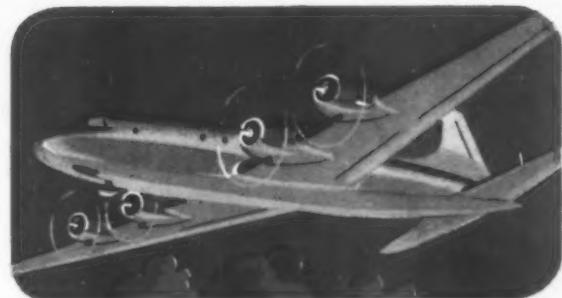
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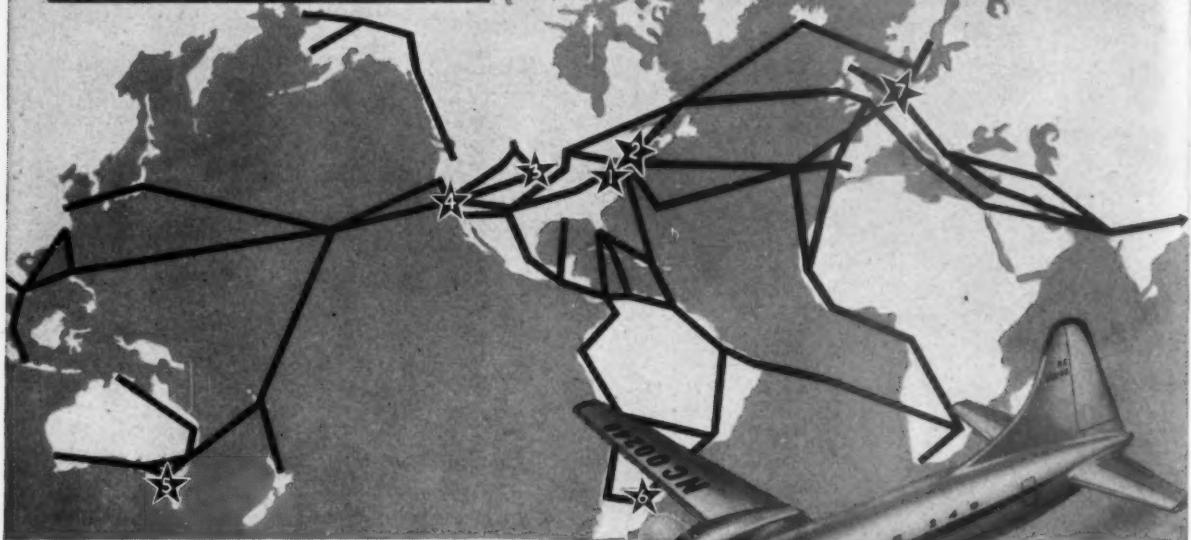
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or wire Sales Dept., Union Oil Company, Los
Angeles 14, California, for full information.

★ Seven major airlines, on four continents, have ordered fleets of the new Convair-240. They are: (1) American, (2) Pan American, (3) Continental, (4) Western, (5) Trans-Australia, (6) FAMA, and (7) KLM Royal Dutch.



The Convair-240—World's Most Modern Twin-Engine Airliner—has been flying since March 16th.

Argentine Air Line orders 5 new CONVAIR-240's!

FLOTA Aerea Mercante Argentina (FAMA) has ordered a fleet of five new Convair-240's at a cost of approximately 1½ million dollars.

FAMA will assign their new fleet to the important Buenos Aires-Rio De Janeiro and Buenos Aires-Santiago routes. FAMA passengers, crossing the high Andes, are going to enjoy the low-level flight comfort of the Convair-240's pressurized, air-conditioned cabin . . .

as well as 300-mile-per-hour speed!

In choosing its new airliners, FAMA has joined the growing list of world-famous airlines which have placed orders for the Convair-240, built by Consolidated Vultee.

The company which built approximately 37,000 planes during the war.

The company which operated a vast trans-Pacific airlines service for the Air Transport Command.

The new Convair-240 will carry 40

passengers at an exceptionally low operating cost per passenger mile. But that's only part of the story . . .

Below you'll find some reasons why the Convair-240 establishes a new concept of "Air Travel for Everybody!"

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2. 40 passengers — at 300 m.p.h.!
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Background and Trends

(Significant Developments and Forecasts Based on the Fortnight's Top News)

Financing: Prediction is that banks are due to loosen up on airline financing soon. One airline official sees some financial deals within 90 to 120 days.

Leaving Soon: William A. M. Burden, Assistant Secretary of Commerce for Air, is reported to be leaving government service soon.

Waiting: Post Office Dept. isn't printing too many 5c air mail stamps. It's waiting to see if Congress plans to increase the rate.

Picking Up: TWA's traffic has picked up substantially. Foreign bookings are said to be heavy, particularly to points beyond Paris. This is the reason for company's re-order of four Constellation 49's.

Curtiss Mock-up: The new all-cargo Curtiss CW-32 transport mock-up is beginning to take shape at Curtiss-Wright's plant in Columbus, O. Plans call for a four-engine, high-wing airplane, designed exclusively for air freight transportation.

Speed Record: Lockheed still has designs on Britain's 616 mph record for a measured course with a souped up P-80, which company engineers believe can attain a speed of 630 mph. The plane is now undergoing work at the Lockheed factory preparatory to sending it to Muroc Lake base.

Watching: Just how closely the Post Office Dept. is watching feeder lines is seen in the fact that PO is keeping records of every piece of feeder mail on and off at each stop. Usually only average loads are kept.

Improving: Airlines' passenger service is showing rapid improvement. Situation is much better than it was a few months ago, and complaints are fewer.

Airline Study: A comprehensive study of U. S. domestic airlines is being proposed by Harvard School of Business Administration. It would go into such things as national route pattern, degree of competition needed, etc. Total amount of money needed for study hasn't been raised yet, however.

Position Soon: Air Coordinating Committee is expected to take a position soon on the chosen instrument—before Congressional hearings later this month. Navy expects to have re-examined its stand by mid-month. Observers' guess is that ACC members will oppose consolidated company.

202 Delivery: Either Northwest Airlines or LAN (Chile) will get first Martin 202. Pennsylvania-Central was first on list, but cut back order. Martin says 202 has higher cruising speed and lower landing speed than had been expected.

Good Showing: Although TWA lost \$14,347,836 last year, observers say that the international portion of its operations made a good showing. The loss is said to be somewhat over \$10,000,000 domestic and over \$4,000,000 foreign. If most lost due to the pilot strike and the Constellation grounding is eliminated, international operations were very satisfactory, they say. And, TWA may get a sizeable retroactive international mail pay increase.

Calls Again: Indicative of upward trend of airline passenger traffic is fact that airline public relations men have started to get numerous calls again from newsmen for space. During recent lull, there were practically no calls.

Investigation Watched: Civil Aeronautics Board investigation of Colonial, Northeast, PCA, Chicago & Southern will be watched closely. If Board decides it may cancel or suspend certificates, there will be opposition.

Skystreak Test: The Douglas D-558 Skystreak is scheduled for its first flight sometime this month, with Gene May, veteran Douglas test pilot in the cockpit. The company has been careful to describe the D-558 as a transonic, not a supersonic plane, but it is significant that it has been stressed for the speed of sound.

Rocket Power: Supersonically, attention is being focused on Bell's rocket-powered XS-1 which was packed aloft by a B-29 and underwent preliminary tests at Muroc last fall. Whether more exploratory flights may be required before it is turned loose, has not been disclosed, but it appeared likely that an altitude test probably will first be tried because the actual supersonic flight will undoubtedly be made at as high an elevation as feasible.

More CAA Personnel: Under terms of appropriation requests to Congress, CAA personnel would be increased from 14,000 to 18,000 during fiscal 1948. Last year Congress criticized CAA for the ratio between number of civilian aircraft and the size of its administrative and supervisory force.

Decision Needed: U. S. must decide whether it favors shift from English to metric system of measurements for aviation. Question will come up at International Civil Aviation Organization in May. Army and Navy oppose switch on grounds of expense (one estimate is \$120,000,000 to change instruments, etc.) and confusion. Commerce Dept. favors change.

Alaska's Needs: Alaskan airline officials list the following among their immediate needs: increased mail pay, adequate CAB regulation, more radio aids, and enlarged dirt landing strips.

Not Determined: Airlines have yet to take a position for or against entry of freight forwarders into the industry, but question is considered one of the most important of the day.

Sea-Air Fight: Sea-Air Committee is pleased with CAB's policy statement on ship lines in air transport because the Board has abandoned the view that Civil Aeronautics Act contains a "legal bar" against the operation of planes by steamship companies. The Committee, spokesman for a number of large shipping companies, does not agree with CAB view that shipping companies, just because they are surface carriers, must shoulder any special burden of proof in presenting their cases, and will make strong fight in Congress to get special legislation putting surface lines into the air.

Mostly Talk: There's been lots of talk about Army and the airlines standardizing on some cargo airplanes that the military could take over in an emergency. But action seems doubtful. Army can't get money like it once could. Airlines would be reticent to adopt planes which might operate only a couple of cents a ton-mile cheaper and which would require extensive changes in engineering and maintenance set-ups.

Unsnarling: Snipping and unsnarling of some of the red tape so annoying to international air travelers should begin in about 60 days. Recommendations of the Air Coordinating Committee's sub-group which has been touring the nation's airports of entry will be forthcoming soon.



RIBS OF RUGGEDNESS

Build 'em right—and build 'em strong. That's always been Boeing's policy. In combat the B-17's and B-29's repeatedly demonstrated Boeing ruggedness. It is demonstrated again in the double-decked, 80-passenger Stratocruiser, shown here under construction.

Every detail of this super-transport is engineered to meet loads far in excess of design requirements. For example, its famed Boeing "117" wing could carry four times the plane's normal take-off weight.



Boeing not only designed the Flying Fortress and Superfortress but built more than half of all the B-17's—more than two-thirds of all the B-29's produced. No other company in the world can match Boeing's experience in 4-engine aircraft.

Far-sighted Boeing engineering has provided that any increase in the 3500-horsepower engine ratings will permit greater payload and still higher speed without structural redesign of the airplane.

These and other structural features contribute to greater safety, reliability and utility. They make for high performance, low direct operating cost, ease of maintenance and superior passenger comfort. Boeing Airplane Company, Seattle, Washington; Wichita, Kansas.

Boeing is building fleets of Stratocruisers for these forward-looking airlines:

PAN AMERICAN WORLD AIRWAYS
SCANDINAVIAN AIRLINES SYSTEM
NORTHWEST AIRLINES
AMERICAN OVERSEAS AIRLINES

UNITED AIR LINES

BRITISH OVERSEAS AIRWAYS CORPORATION

BOEING
STRATOCRUISER



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Chosen Instrument Proposal Faces Test

House Committee Tackles Vital Issues of Policy As Opposing Interests Rally Forces for Showdown

By GERARD B. DOBBEN

U. S. international aviation policy based on the theory of regulated competition faces one of its most serious tests in the next few months at the hands of Congress.

Two important questions will be answered and the issues will be settled for at least two years. They are: (1) Shall the U. S. establish the Chosen Instrument policy in international air commerce? (2) Shall steamship companies be permitted to operate air services internationally.

Both of these issues will be met squarely during hearings, beginning April 22, by the House Interstate and Foreign Commerce committee which has taken the lead away from the Senate committee of like jurisdiction. Identical bills providing for a "consolidated international air carrier" would dissolve existing U. S. international air carriers and form a new corporation in which domestic air carriers, steamship companies, the railroads and the general public would participate in the stock ownership.

Two other bills would amend sections 401 and 408 of the Civil Aeronautics Act to give steamship companies the clear right to operate air services—a right generally denied them under CAB interpretations of existing legislation. The committee, as this was written, had not decided which group of bills would be heard first.

As all forms of transportation are interested in this legislation, the ensuing fight promises to be one of the most bitter that Congress will see during this session. Party lines will be split. The overall issue will be between monopoly and free competition in the battle over the Chosen Instrument.

Strong Opposition Forming

Strong opposition to the Chosen Instrument bill is forming. While the domestic air carriers do not plan to revive the Air Policy Committee which led the fight against the McCarran All American Flag line bill in the last Congress, several of the larger domestic carriers are laying the plans for a last ditch fight. The steamship interests will oppose the Chosen Instrument bill. Several of the labor unions, including some of those which supported the McCarran bill last year, will oppose the bill this year. The Air Line Pilots Association definitely will be on record

as opposed. The position of the Association of American Railroads has not been decided.

House bill—H. R. 2827—introduced by Chairman Charles A. Wolverton, chairman of the House Interstate and Foreign Commerce committee, provides for "the merger and the consolidation of international air carriers for the United States." The bill S. 987 introduced by Sen. Owen Brewster (R., Me.) provides simply for "the creation of a consolidated international air carrier," omitting the word "merger."

Broadly the Chosen Instrument bills provide that 55% of the common stock in the new company may be owned, in these amounts, by these transportation groups: Domestic air carriers, 25%; steamship companies 20% and Class I railroads 10%. No one stockholder in any of these classes may own more than 3%. Domestic carriers would be compensated for the assets of their international routes out of the 25% domestic carrier classification.

Available to Public

U. S. international flag carriers would receive their stock from the remaining 45%, a portion of which would be made available to the general public.

The bills provide further that the "consolidated international carrier" shall acquire "through issuance of appropriate amount of its ordinary stock, all of the assets, or all of the outstanding stock of all 'international air carriers'." This phase of the bill would destroy the corporate entity of Pan American, American Overseas and Panagra airlines. However, because of Pan Am's size and relative position and half-ownership of Panagra it has been interpreted that Pan American stockholders, either through a holding company, or as individuals would receive the greatest proportion of stock in the new company, at least at the outset of the new venture.

Counsel of some of the airlines opposing this legislation believe this proviso will give Pan American interests immediate control of the new company because Pan Am will on a ratio basis start off with a sizeable block of stock.

While the bill provides that eventually all stockholders are to be limited to a 3% stock interest, the bill would grant these international carriers who originally receive more than 3% stock

six months to dispose of their excess stock.

Opposition lawyers claim Pan American will be able to control the board of directors at the outset and, in addition, at the end of the six months' period will have an opportunity to "sell, distribute or otherwise dispose of" the excess over 3% to favorable groups, perhaps, they say, to existing Pan Am stockholders who could be counted on to keep the company in control of the chosen instrument.

There also is provision whereby the consolidated carrier will acquire real estate, ground equipment, stock, notes or other securities or evidences of indebtedness and flight equipment of international routes of domestic carriers. Section 2 of the bill states that stock, notes, or other securities or evidences of indebtedness acquired by an air carrier after Oct. 25, 1945 need not be acquired by the consolidated carrier.

Significant Date

This date was taken from the McCarran bill S. 326, introduced early in the last Congress. Its intent may have been to put domestic carriers on notice regarding investments in air transport companies in foreign countries. Nevertheless TWA spokesmen say this would exclude every foreign interest that TWA has acquired from compensation for its investments.

The bill has seven subsidy provisions, including construction differentials, patterned somewhat after present day marine legislation. In a measure, foreign aircraft construction costs would provide the yardstick as to what the public treasury would have to stand in the way of differentials. Subsidies mentioned are: construction cost differential, cost of any features incorporated in aircraft for national defense, purchase of obsolete flight equipment, operating differentials, national interest subsidy, compensation for transportation of mail at rates fixed by treaty convention or agreement, and subsidy to meet governmental aid paid to foreign competitors.

While the Civil Aeronautics Board remains the regulatory agency and is given broad powers under the bill, some lawyers feel the bill is defective in that CAB or the policy committee, which is formed under the bill, cannot compel adequate service. It is provided that the chosen instrument shall operate to every country in the world with more than 5,000,000 population, "except such countries as to which the Board, on the recommendation of the policy committee, shall find that air trans-

portation service is not required by the public convenience and necessity or otherwise to further national policy."

One airline lawyer says this language should be studied carefully because it does not give the Board or the Policy Committee any authority to direct the chosen instrument to operate to any country having less than five million persons.

Another airline spokesman said this provision removed the obligation to serve 13 of the 20 American Republics and Denmark, Norway, Ireland, Switzerland, Liberia, Czechoslovakia and New Zealand.

Other industry observers have questioned the legal right of the government to compel the sale of assets of a corporation in such a way as to require stock acceptance in lieu of cash. CAB's task in setting up a plan for the formation and operation of the new company has been described in certain aviation circles as Herculean. One of the provisions of the bill requires the Board to formulate a plan so that all employees now engaged in international air commerce both for international and domestic carriers shall receive fair and equitable treatment and be assured of continued employment.

With reference to House hearings on the chosen instrument bills, Rep. Carl Hinshaw (R. Calif.), ranking Republican member, said the Civil Aeronautics Act had long been due for an overhauling. However, he said it was impossible to do this job until the two important questions of sea-air and chosen instrument policy had been decided.

Recently Pan American spokesmen said the company was no longer interested in chosen instrument legislation because of its application and desire for domestic routes. They added, however, that Pan Am would follow government policy whatever that was ultimately decided to be.

Richter Quits TWA Over Policy Matters; Leaves After 20 Years with Company

Asserting that he was unable to agree with the policies of TWA's principal stockholder (Hughes Tool Co.), Paul E. Richter, the airline's executive vice president, announced April 7 that he had resigned from the executive committee and would not stand for reelection as an officer or director. "This decision has been made only after much consideration on my part," he said. "It is brought about because I cannot agree with the policies, the programs, or the procedures proposed by the controlling stockholder."

Richter, 51, thus followed the same course as Jack Frye, with whom he had been associated in TWA for over 20 years. Frye announced Feb. 21 that he would not stand for re-election as president or director.

Election of TWA directors and officers is scheduled for April 24, when the stockholders hold their annual meeting, and Richter had been regarded as a logical choice for the presidency. It was reported that he would take the job only under certain conditions, which evidently were not met.

"I do not wish to announce my future plans at this time," Richter said in announcing his resignation. It had previously been reported that he had been offered a position with American Airlines.

A. V. Leslie, chairman of TWA's executive committee, issued a statement saying that the committee "regrets Mr. Richter's decision to leave the company and his inability to agree with the policies now being developed to make TWA financially sound . . .

"The committee . . . wishes to emphasize its unbounded confidence in the future of TWA . . . It is determined there will be brought about the financial soundness that will serve

the best interests of both the employee and the stockholder."

Also announced last fortnight were the resignations of Maj. Gen. Arthur R. Wilson, who for the past year has been vice president and European director of TWA, and Maj. Gen. Benjamin Giles, vice president and director of the Middle East-North Africa division. Ray Wells, former TWA director of operations under Gen. Giles, is serving as director of the Middle East-North Africa division.

New Planes Seen Re-Shaping Routes

A re-shaping of airline route patterns will be forced with use of faster and bigger transports, such as the Douglas DC-6, James M. Landis, chairman of the Civil Aeronautics Board, declared at a banquet in Los Angeles, March 28.

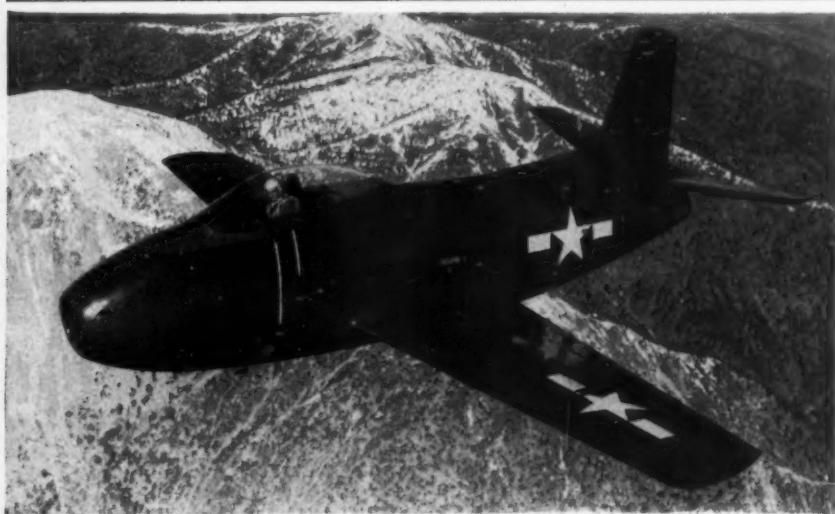
Emphasizing that route patterns depend upon type of planes used, Landis stated that "our map for years has been a DC-3 map. With the entry of four-engined craft, we have had to reshape that map so that the routes will be more in line with the distances and times that can be flown with these new craft. New economic competitive pressures come into being, all of which have to be watched as much as possible so that a new and evolving route pattern will give the public the service to which it is entitled."

While the CAB chairman made no reference to mergers or specific types of changes, his statement was taken to indicate that important route modifications will be forthcoming.

Internationally, Landis pointed out that the record of U. S. flag lines "is one that every American can be rightly proud of. We can compete with the foreigner, not only compete with him, but it looks as if he can't compete too well with us. Our carriers have struggled to maintain rates at lower levels than the others, partly because some of the others were perhaps too much dominated by shipping interests who didn't want to see the air carrier compete too closely with the ship."

CAB to Investigate PCA

CAB has ordered an investigation of Pennsylvania-Central Airlines' finances, routes and operations, similar to investigations previously begun on Colonial Airlines, Northeast Airlines, and Chicago and Southern Air Lines. The Board also gave PCA a temporary increase in mail pay, keeping it on its present 60c per ton mile rate, but providing a system of "minimum capacity factors" (false mail loads) that will put more money in the airline's pocket.



Navy's Fastest—First flight picture of the Navy's fastest airplane—North American Aviation's FJ-1 fighter—catches the jet streaking along at "well over 500 mph." Now in production at the company's Los Angeles plant, the all-jet fighter is designed for carrier operations.

Aptitude Test Plan Urged For Selecting Airline Pilots

CAA Lets \$25,000 Contract For Psychological Research

By KEITH SAUNDERS

Because the speed of the modern transport plane demands increasingly more from the pilots who fly them, the government agencies charged with responsibility for aircraft accident prevention are inclined now to place temperament on a par with native intelligence and flying technique as essential attributes of a good airline pilot.

That's why the Civil Aeronautics Administration has let a \$25,000 contract with the American Institute for Research for the development of psychology and aptitude tests designed to be used in the certification, selection and upgrading of commercial airline pilots.

The tests are being developed at the University of Pittsburgh by Dr. John C. Flanagan and associates, developers of the "Stanines" system of testing used by the Army Air Forces during the war in the screening of a million young men aspiring to become flight personnel.

Dr. Flanagan has been given until July 1 for completion of the project, and when he has submitted his report and recommendations, the proposed tests will be scrutinized thoroughly by CAA and CAB officials. Next step will be to call in representatives of airline pilot groups and airline management, because the aim of the Federal agencies concerned is to "sell" the pilot-testing plan to the airlines and their pilots, rather than to attempt to force it upon them.

The government is convinced, and several witnesses so testified during the recent air-crash investigations by Congressional committees, that psychological and temperamental factors doubtless cause a sizeable percentage of all aircraft accidents resulting from pilot blame or pilot error.

Favors Aptitude Tests

A vigorous champion of the aptitude tests for airline pilots is Wallace S. Dawson, director of the Safety Bureau of the Civil Aeronautics Board. Himself a pilot for more than 20 years and a one-time flight instructor for the Army Air Forces, Dawson has a good understanding of what makes pilots "tick" and why some of them are more prone to have crackups than are others.

The CAB safety chief believes the necessary attributes of a good airline pilot are: (1) Technique, i.e., flying ability. (2) Native intelligence (as distinguished from "book learning"). (3) Proper temperament. (He does not list judgment because that, he says, is a product of intelligence plus experience).

Under the heading of temperament, Dawson includes those characteristics of a man's makeup with which he was born and which cannot be "educated" out of him. If a man is inherently slow to grasp and react to abrupt changes in circumstances or conditions, his reactions cannot be speeded up, however intelligent he may be, Dawson says, and while he might make a fine engineer or accountant he has no business piloting a transport plane.

And one of the troubles today, he added, is some of the pilots are not temperamentally suited to fly five-mile-a-minute airplanes. The planes are just too fast for their reflexes, for it has been demonstrated that the faster and heavier the plane is, the quicker and more sure must be the pilot's reaction when trouble springs up and danger impends.

Also, the fact that a pilot is inherently the take-a-chance type might completely escape the attention of the instructor or examiner who examines him for his transport pilot's license, for he certainly would be most circumspect in his flying while taking his flight tests and checkouts. But if a pilot is accident-prone because of his temperamental makeup, his weak point or points would stand out prominently in a carefully worked out mental aptitude test.

That is why the CAA is willing to spend \$25,000 on development of such tests and why Dean R. Brimhall, assistant to the administrator for research, is so keenly interested in the project, just as is Dawson. For these men believe that the screening of airline pilots for quirks of temperament will pay off in a matter of a few years in a near elimination of pilot-blame accidents.

Different Approach Needed

The tests Dr. Flanagan and his associates worked out for the aviation psychology program of the AAF were called "Standard Nines," nine being the top grade and one the lowest. This was soon corrupted to "Stanines," and that is the name under which the tests are known today. The same principles employed in developing those tests will be used in working out tests for airline pilots, but the actual tests will necessarily be somewhat different.

This is because a different approach is necessary, since the airline tests will be given to experienced flyers, whereas the AAF tests were given to men who for the most part had never flown and who, furthermore, were considered expendable. Aim of those tests was to eliminate at the outset those with no obvious aptitude for flying and who probably would "wash out" before getting their wings. The tests to be proposed for airline

pilots will be designed to ascertain whether, in addition to their innate intelligence and their proficiency in flying and maneuvering a plane, they also are psychologically and temperamentally constituted to measure up to unusual, unexpected and emergency conditions.

Since the tests, if adopted, would have to be given not only to prospective new airline pilots but also to present pilots, many of whom have flown for thousands of hours and a number of years, they will have to be devised so that no veteran pilot can complain that he was "busted" because he couldn't answer a set of questions. Flight tests will have to supplement the written tests, and the results of one be checked against results of the other.

"Although it would be my recommendation that such tests eventually be incorporated into the CAA's pilot-certification regulations, we probably would start out with it on an advisory basis only, with compliance by the airlines a matter of voluntary cooperation," Dawson stated.

He said he believed enlightened airline management would be quick to grasp the benefits to them of such a system of testing for their pilots and that the pilots, themselves, would see that such testing would raise the standards of their profession and would give them a greater measure of security as a group.

"We expect some opposition at first from pilot groups, and we probably will be accused of trying to bring about a wholesale purge of pilot ranks," the CAB official said, "but the purge is the furthest thing from our minds. The relatively small number of pilots who might fail the proposed tests will certainly be better off, for if they are accident-prone and continue to fly airliners, it would be just a matter of time before the law of averages would catch up with them and they would crack up a ship, breaking not only their own necks but also those of their passengers."

So it appears that we are likely to hear a lot more about "Stanines" in the not distant future.

Piedmont, Southern Airways Get Feeder Certificates

Piedmont Aviation, Inc., of Winston-Salem, N. C., and Southern Airways, Inc., of Birmingham, Ala., received three-year temporary feederline certificates in CAB's decision in the Southeastern States Case. Piedmont was authorized to operate local service over 1,625 miles of routes in Virginia, West Virginia, Tennessee, Kentucky, Ohio and North Carolina. Southern Airways received about 1500 miles of routes in Tennessee, Mississippi, Alabama, Georgia, Florida and South Carolina.

The Board also authorized additional intermediate stops for American, Delta, Eastern, PCA and TWA.

Operations Analyzed:

Control of Indirect Costs Is Key to Airline Economy

The future economic health of the airline industry will depend upon the trend of its indirect costs, and principally upon its personnel expenses in five indirect classifications—ground operations, equipment maintenance, passenger service, traffic and sales, and general and administrative.

That is the primary conclusion reached in a comprehensive analysis of "Trends in Ground and Indirect Expenses in the Certificated Domestic Air Transportation Industry" just completed by John B. Ford, Washington aviation consultant.

Pointing to the trend of indirect expenses, the study shows that in 1939, 1940, and 1941, the direct flying expenses of the domestic airline industry as a whole were about equal to the ground and indirect expenses. (Direct flying expenses are inclusive of flying operations; flight equipment maintenance, direct; and flight equipment depreciation. Ground and indirect costs include ground operations; equipment maintenance, indirect; ground equipment maintenance, direct; passenger service; traffic and sales; advertising and publicity; general and administrative; and ground equipment depreciation).

By 1945, as shown in an accompanying table, indirect expenses for the industry had risen to 161% of the direct expenses. The larger airlines showed generally higher percentages, the smaller airlines somewhat less.

Major Expense Items

In the first nine months of 1946, the relative indirect expense of the industry had fallen to 149% of the direct expense, but primarily because direct expense per revenue plane mile had increased as a result of training programs, the greater use of DC-4 equipment, and as a result of accelerated depreciation. Between 1945 and 1946, the indirect expense per revenue plane mile and per revenue passenger mile actually increased.

The analysis reveals that five major expense classifications—ground operations, indirect equipment maintenance, passenger service, traffic-sales, general-administrative—accounted for 97% of the total increase in indirect expense per revenue mile. Salaries and wages in these major accounts as a group in 1945 constituted 54% of the total indirect costs.

A prime cause of the unfavorable trend in indirect expenses is found in the increase in number of employees whose salaries come under the indirect operating classifications. While direct employees increased from approximately 15.4 per plane in 1940 to about 37.6 per plane in December, 1945, or

pared to the approximate Class 1 railroad cost in 1945 of not more than 47c per passenger for items corresponding to ground operations and traffic and sales, and not more than 23c per passenger for items corresponding to passenger service and advertising and publicity. And these railroad figures are greatly overstated because the former figure includes the entire cost of signal and interlocking operation and depreciation and all yard costs except train house expense, and the latter figure includes all trainmen and train expenses, and the gross cost of dining car operation with no revenue deduction."

Outlining a possible control program for reducing indirect expenses, Ford suggests the development of various classes of air transportation services at different fare levels, so that the same personnel and many of the same facilities might be used for each of the services; vigorous development of air freight, possible modification of route patterns, and government control "critically and definitely evaluating the efficiency and economy of airline management and of the expenses which are subsidized."

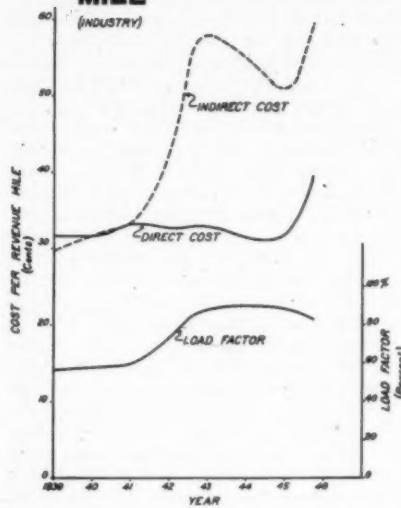
The 52-page study includes detailed tables showing direct, and indirect expenses for the individual domestic airlines since 1939, along with charts portraying the trends. The analysis is available from Ford at 1809 G St., N. W., Washington, D. C. for \$10 a copy.

TWA Re-Orders Four Connies

TWA has ordered four Model 49 Lockheed Constellations, a transaction which completes the Model 49 series and leaves the manufacturer free to concentrate on the new Model 649 series. The airline, last fall cancelled an order for eight Model 49's, and Lockheed subsequently sold four of them to another line.

Meanwhile, Lockheed's annual report disclosed that within the past month TWA has indicated desire to cancel its order for 18 Model 649 Constellations. Lockheed has agreed to accept the cancellation provided they receive for such cancellation "a release from TWA from our liability under certain claims it contended it had against the company."

DIRECT AND INDIRECT COST PER REVENUE MILE (INDUSTRY)



144%, indirect employees increased from 25.8 per plane in 1940 to 86.6 in 1945, or 238%. Meanwhile passengers carried increased only 135%.

Marked variations were found in indirect expenses among the individual carriers. Thus, Ford points out that in the first nine months of last year TWA spent an average of \$14.48 on each passenger for ground operations, traffic and sales service, and \$5.72 additional for passenger service, advertising and publicity. The industry average for these respective costs were \$7.22 and \$2.74 per passenger. Northeast Airlines averaged only \$3.56 per passenger for ground operations, traffic and sales, and \$0.81 per passenger for passenger service, advertising and publicity.

Even the lowest airline costs, Ford declared, "appear extravagant com-

Direct Flying Costs and Ground-Indirect Costs per Revenue Mile

	1939	1940	1941	1942	1943	1944	1945	9 mos. 1946
Direct	31.59c	31.83c	33.30c	32.55c	32.83c	31.26c	31.69c	39.82c
Indirect	29.68c	31.70c	33.34c	42.91c	57.80c	54.95c	50.99c	59.38c

Direct Flying Costs, Ground and Indirect Costs, and Ratio of Ground-Indirect Costs to Direct Costs (Costs in thousands of dollars)

	1939	1940	1941	1942	1943	1944	1945	9 mos. 1946
Direct	\$26,294	\$35,178	\$44,932	\$36,392	\$34,613	\$45,150	\$69,223	\$91,343
Indirect	24,692	35,028	44,987	47,974	60,949	79,372	111,404	136,264
Ratio	.94	1.00	1.00	1.32	1.76	1.76	1.61	1.49

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IN THE AIR NOW . . . on the airlines soon. The Martin 2-0-2 is passing flight tests in record time. Pilots say, ". . . more get up and go than any non-military plane . . . can't imagine any plane having better handling characteristics and more satisfactory stability either directionally, longitudinally or laterally . . . new airfoil design most successful!"

Here's Why Martin 2-0-2 Transports Take the ? Out of Airline Profits

Now in full production, the Martin 2-0-2 is rolling off the assembly lines for early delivery. Martin's large advance orders mean lower first costs to you, as original production costs are spread over a greater number of planes.

Unsurpassed in passenger comfort and convenience, this Martin luxury liner builds passenger acceptance and fills seats as only a postwar aircraft can. This spells airline profits today and in the future. THE GLENN L. MARTIN COMPANY, BALTIMORE 3, MARYLAND.

FOUR Profit-Points for Airlines



LOWER first costs! Martin quantity production for large advance orders decreases first cost and increases the value of your equipment dollar from the start.



LARGER payloads! Greater seating capacity—36 to 40 passengers—increases your seat per mile profit with the Martin 2-0-2. Modern design pays dividends!

HIGHER speed! Cruising at 280 m.p.h., the Martin 2-0-2 cuts per mile operating costs and turn around time. It speeds up schedules, fills seats, increases profits.

Aviation Calendar

Apr. 15—European-Mediterranean Regional Air Traffic Control Meeting, ICAO, Paris.

Apr. 16-18—SAE Transportation Meeting, Hotel Stevens, Chicago.

Apr. 17-19—AIA National Aircraft Standards Committee, National Meeting, Dayton, Ohio.

Apr. 20—Air Show, Charleston, S. C., auspices Chamber of Commerce and Junior Chamber.

Apr. 26-27—Southeastern Air Show and Exposition, Jacksonville, Fla.

Apr. 29—International Air Transport Association executive committee meeting, Montreal.

May 1-2—SAE Personal Aircraft Meeting, Lassen Hotel, Wichita, Kan.

May 1-2—AIA Eastern Regional Traffic Committee, Hartford, Conn.

May 5-10—International Travel Exposition, Grand Central Palace, New York.

May 6—ICAO Assembly Meeting, Montreal.

May 8—Women's National Aeronautical Association national convention, Los Angeles.

May 8—CAA-sponsored state aviation forum, Atlanta, Ga.

May 8-9—ALA Western Regional Traffic Committee, Los Angeles, Calif.

May 9-10—Annual Michigan Aeronautical Conference, Hotel Olds, Lansing.

May 9-18—"St. Louis Air Fair of 1947" regional aircraft show, St. Louis Arena, sponsored by Aviation Council of Metropolitan St. Louis.

May 11-15—American Association of Airport Executives annual convention, Sherman Hotel, Chicago. (Airport exposition and exhibit trade show to be held in conjunction.)

May 14-16—Aircraft Industries Association board of governors meeting, Williamsburg, Va.

May 15—IATA Technical Committee meeting, Miami Beach, Fla.

May 16-22—Third International Air Service Exhibition (Aerofair), Utrecht, The Netherlands. Postponed from April 16-22.

May 21—CAA-sponsored state aviation forum, Jackson, Miss.

May 24-June 1—Michigan Aviation Week. Aircraft show at Detroit.

May 26-27—Institute of the Aeronautical Sciences light aircraft meeting, Detroit.

May 26-29—American Society of Mechanical Engineers, aviation meeting, Los Angeles.

May 29-June 1—Annual Mississippi air tour sponsored by Jackson Chamber of Commerce.

May 30-June 1—Philadelphia Air Races, Northeast Airport, Philadelphia.

June 1-5—Aviation Writers Association annual convention, Los Angeles.

June 1-6—SAE Summer Meeting, French Lick Springs Hotel, French Lick, Ind.

June 2-4—National Aeronautic Association annual meeting, Ft. Worth, Tex.

June 3-4—Personal Aircraft Council, AIA, meeting in Los Angeles.

June 4-6—Aero Medical Association, 18th Annual Meeting, Hotel Ritz-Carlton, Atlantic City.

June 7-8—13th Annual National Air Carnival, Birmingham, Ala., sponsored by Birmingham Aero Club.

June 9-10—Aeronautical Training Society, annual meeting, Mayflower Hotel, Washington, D. C.

June 17—ICAO South American Regional Air Traffic Control Meeting, Lima, Peru.

July 3-6—International Air Races, Long Beach, Calif., Chamber of Commerce sponsor.

July 4-20—International aircraft exhibition, Halle du Cinquantenaire, Brussels, Belgium.

July 15—ICAO South Atlantic Regional Air Traffic Control Meeting, Rio de Janeiro.

American Pilot Pact Sets Some Rates Above TWA Award

Formula Covers Airplanes With Speeds Up to 400 Mph

SIGNING of a contract early this month between management and pilots of American Airlines in which the flyers were given increases over rates laid down in the TWA arbitration award case is regarded by observers as a hopeful sign that harmonious relationships between management and pilots on an industry-wide basis may be expected in the years immediately ahead.

The pay formula in the American case has been made broad enough to cover operation of existing and prospective aircraft up to block to block speeds of 400 miles an hour. While newer and faster type planes are not specifically written into the contract, the agreement provides that when put in use they shall be operated at the specified rates for their respective speed and weight categories until a new contract is negotiated.

Agreement to this overall formula will eliminate a friction point such as resulted when TWA attempted to put its Lockheed Constellations into operation ahead of the actual signing of a new contract. This disagreement, coming on top of other pilot-management disputes, helped to precipitate the break last year which led to the first pilot strike in the history of U. S. air transportation.

The American contract undoubtedly will have considerable effect on future industry-wide negotiations, some of which are now in progress.

Terms of Contract

Under the terms of the American contract, first pilots, flying Douglas DC-3 equipment, are to receive a base salary of \$2,200 for the first year with increases of \$200 annually through the eighth year when the base pay stabilizes at \$3,600 a year. First pilots also are to receive \$4.76 per hour for day flying, \$7.14 per hour for night flying. Previous DC-3 rates, on an hourly basis, were \$4.60 and \$6.90 an a day and night basis.

In addition, a first pilot and reserve pilot, when flying as a first pilot, "shall also receive mileage pay at monthly mileages of up to and including 10,000 miles; 10,001 to 12,000 miles, inclusive; and in excess of 12,000 miles, respectively, 2c per mile for each mile per hour in excess of 100 mph during the first 10,000 miles flown; thence 1½c per mile for each mile per hour in excess of 100 mph flown between 10,001 miles and 12,000 miles, inclusive; thence 1c per mile for each mile per hour in excess of 100 mph flown in excess of 12,000 miles, such mileage pay to be computed on a 'no reverting' basis." Block to block speeds are used.

The base pay scale on DC-4 equipment is the same as for the DC-3 but the hourly rate is \$6 for daytime flying and \$9 for night flying. The same mileage rate formula for the DC-3 also holds as effect is given for the faster speed of the

four-engined equipment. The DC-4 block to block speed used is the 200-225 mph bracket. The comparable hourly rate in the TWA award case for domestic service operations of the DC-4 is \$5 and \$7.50 respectively. All flying is set-up on an 80 hour per month basis.

Pay for flying the DC-6 is on the same base and mileage formula heretofore outlined but the hourly rates are: day flying \$7.76 per hour, night flying \$11.64 per hour. This is based on a block to block speed of 275 miles to and including 299 miles an hour. If the block to block speed on the DC-6 shall be determined as from 250 to and including 274 miles an hour, the hourly rates will be \$7.50 and \$11.25 respectively.

Base pay of co-pilots on a monthly basis, progressively by six month periods until four years of service is reached, follows: 1st 6 mos., \$250; 2nd, \$280; 3rd, \$310; 4th, \$330; 5th, \$350; 6th, \$370; 7th, \$390 and 8th, \$410.

Pilots, under the contract, shall be furnished suitable lodging at their lay-over stations, shall be allowed 70c for breakfast, \$1 for lunch and \$1.50 for dinner when away from base stations, shall receive eight days vacation after six months service, two weeks at the end of the first year. A first pilot shall be paid his regular base pay plus \$15 for each day of his vacation for which he is eligible; a reserve pilot will be paid vacation pay as a first pilot if during the preceding calendar year, he shall have been credited with 27 or more weeks' longevity for base pay purposes under provisions of the agreement and a co-pilot, or a reserve pilot who is not entitled to a vacation as a first pilot, shall be paid at the co-pilot rate to which his accrual of service as a pilot entitles him.

Co-pilots under the TWA award fared slightly better than in the American Airlines contract. Their starting pay is \$260 per month and at the end of four years is \$420.

10c 'Air Letter' Coming Soon

An "Air Letter" service patterned somewhat after the wartime V-Mail and permitting worldwide mailing for 10c will be inaugurated by the Post Office Dept. on April 29. Unlike V-Mail, however, Air Letter sheets will not be photographed but are designed to average a minimum of 150 to the pound. Messages are to be written on the inner side of the sheets, which can be folded into the form of an envelope on which regular air mail markings are printed.

Flying Farmer Convention, Aug. 7-9

The National Flying Farmers Association will hold their 1947 convention at the Oklahoma A. and M. College, Stillwater, Okla., August 7-9, it was announced recently by H. A. Graham, executive secretary. College authorities have assured the group that facilities for sleeping, eating and meeting places will be available for 2,000 or more people.

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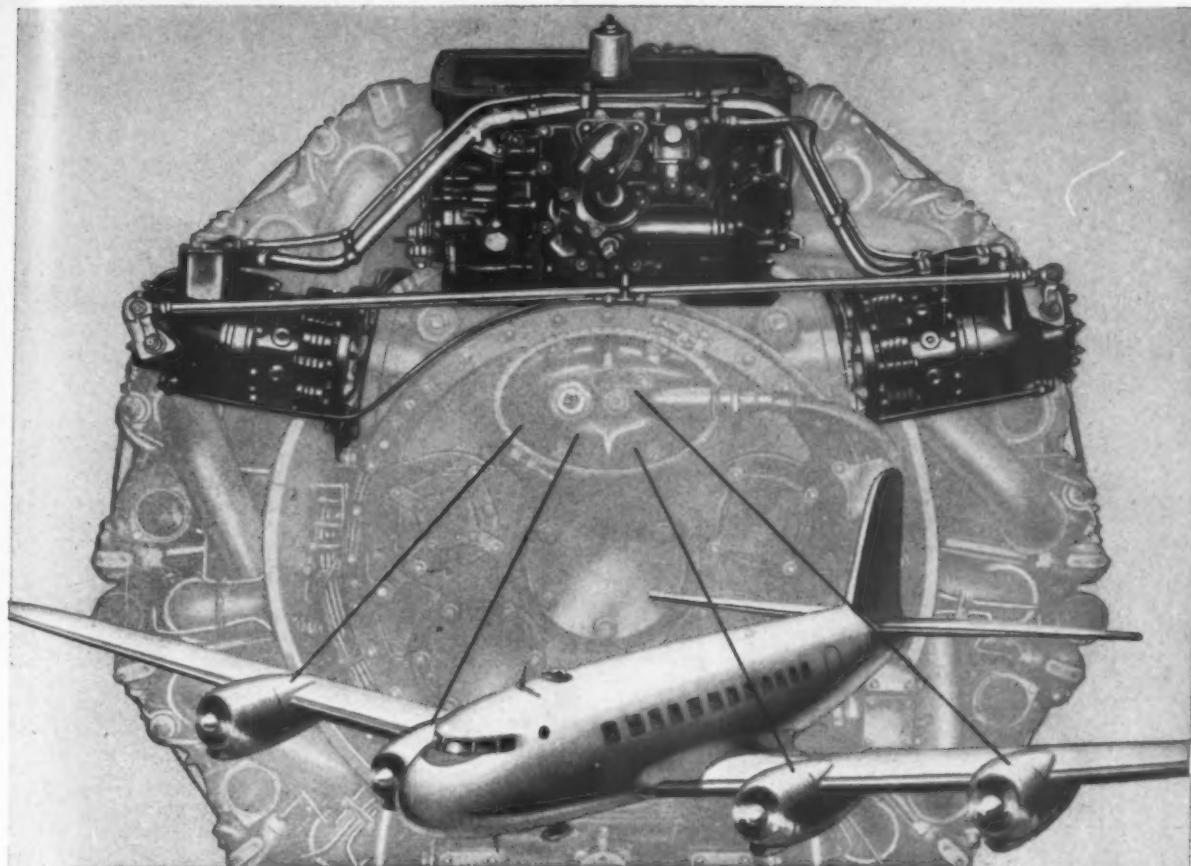
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Bendix Direct Fuel Injection

CUTS COSTS—ADDS PAYLOAD—ADDS CRUISING RANGE

The Bendix* Fuel Injection System adds so much to comfort, safety, and operating efficiency that it merits the attention of every airline executive.

Engines start more quickly, with less backfiring and shorter warm-ups. Each cylinder receives the precise fuel charge, and there is no manifold condensation. Intake passages carry air only, greatly reducing fire hazards. Since the fuel is vaporized within the cylinder there is no "refrigeration" of intake manifold or carburetor, and consequently no icing from fuel vaporization. Fuel distribution is exactly equalized between

cylinders, permitting leaner mixtures and major savings in fuel. Precision-controlled fuel distribution also means smoother operation, longer engine life, and less noise and vibration to annoy passengers. Altitude performance is improved, with more engine power and better acceleration. Engine stalls or faltering due to fuel feed failure are eliminated because fuel feed is unaffected by gravity or inertia effects in climbs, banks or dives.

Performance records, as shown below, make it clear that this Bendix development is one of the most important aviation advancements in years.

Bendix Products Division, Bendix Aviation Corporation, South Bend 20, Ind.

AIRLINES REPORT . . .

... Estimates of fuel savings reach 6 per cent—increased payload of 900 pounds

... Increased cruising speed of 20 M.P.H.
... Less vibration and noise.

... Smoother engine operation, lowered engine maintenance costs!

... More engine power and acceleration, and improved altitude performance

PRODUCT OF

Bendix
AVIATION CORPORATION

Bendix

PRODUCTS
DIVISION

REG. U.S. PAT. OFF.



Here come United's MAINLINER 300s!

The first truly postwar air transport—United's Mainliner 300, built by Douglas as the DC-6—joins the Mainliner Fleet April 27.

With this mighty 4-engine, 300-mile-an-hour luxury plane, United will offer faster flights from New York and Chicago to the Pacific Coast—border to border on the Pacific Coast—and to Hawaii.

Built to carry more, the Mainliner 300 will be limited to 52 passengers, assuring every traveler more comfort, added roominess. *Pressurized* cabin will provide low-altitude comfort at higher cruising levels. Fine appointments in the "compartmentized" cabin, superb table-served meals, will lend new meaning to United's "service in the Mainliner Manner."

UNITED AIR LINES

the Main Line Airway

PASSENGERS • MAIL • EXPRESS • FREIGHT

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Safety Board Support Seen As Committee Concludes Hearings

Experts of the House Interstate and Foreign Commerce committee have been assigned the task of digesting and evaluating the voluminous testimony taken during several weeks of air safety hearings preliminary to writing a report and recommendations to guide Congress later in consideration of remedial legislation.

It appeared reasonably certain that one of the major recommendations to come out of these hearings would be re-establishment of an Independent Air Safety Board. While the testimony does not reveal any direct relationship between the previous Board's existence and the fact that there were no air transport accidents during the 15 months of its life, there is considerable sentiment on the committee for the Board's revival. Revival of this agency also has the backing of the powerful Air Line Pilots Association.

Since the hearings were started in January, the committee has heard from almost every segment of the aviation industry, and it appears that Congress can increase safety in air transportation in direct ratio to its willingness to spend public funds for some of the technological improvements that have been recommended. The decision as to the amount of these funds which will be expended in fiscal 1948 rests with another group—the House Committee on Appropriations.

During the last four days of the hearings, the committee was given information on developments which some day may revolutionize the air transport industry's concepts of air navigation, traffic control, airport runway construction, and runway lighting.

Loren F. Jones, RCA research and development engineer, through use of visual aids, urged Congress to look at the problems of air transport and safety from the viewpoint of the system as a whole, rather than from the viewpoint of individual devices. Teleran Jones stated, is intended to provide general navigation, traffic control, collision prevention, talkdown landing (GCA), pictorial landing, automatic flight, weather map reception taxiing information and other services, all in one system. He said that such a system, which would cost approximately \$700,000 for an airport with three runways and six directional landings, might be three to five years away.

Glass Runways Proposed

Revolutionary all-weather runways of steel and glass were proposed by Joseph Fodor, of Fodor Research Laboratories, Pittsburgh. Fodor claimed his proposed runways, developed after years of research, would have full day-light appearance in any weather and would obviate the necessity for runway and approach lights, fog dispersal

More Rail-Mail Pay

Disclosure that 202 railroads have requested a 45% increase in mail transportation rates which would add \$60,000,000 annually to postal costs was made on the floor of the House recently by Chairman Edward H. Rees, (R, Kans.) of the House Post Office Committee. Stating he had obtained this information from the Interstate Commerce Commission, Rees sharply criticized P. O. Dept. officials for failure to inform the committee of this request from the railroads.

equipment, snow removal facilities and electronic landing system.

The runway would have a deck formed of a grid-like framework of steel with a new type of lamp set within the bars of the grating panels or below them. This illuminated runway would be visible for miles at night in any kind of weather, and the lamps not only would provide illumination for landings but sufficient heat to dispel fog and melt snow. A less expensive alternate type runway would be built of illuminated glass bricks. He said he hoped to obtain backing either from government or industry to build an experimental runway, preferably in the Aleutians.

Little Objection Found To Supplanting Air Coordinating Group

Compromise legislation providing for the establishment of a National Aviation Council as successor to the Air Coordinating Committee probably will be reported to the House of Representatives sometime after the middle of this month.

Hearings on the Hinshaw bill, H. R. 2220, which would establish the Council largely from among members of ACC and set up an Industry Advisory Board, revealed that ACC had no strenuous objections to being supplanted by the Council if certain amendments were written into the bill.

James M. Landis, speaking as co-chairman of ACC, said no objections would be raised to the bill if the unanimous vote rule which now governs ACC deliberations, were to replace the majority rule provided in the Hinshaw bill and if the President were permitted to appoint a chairman from one of the member government agencies instead of a full time chairman from the public at large. He said the provision for a unanimous vote was in the national interest as it made the President the final arbiter in disputes over policy between the various government departments and agencies concerned with both civil and military aviation. He recommended an executive secretary to serve both the Council and the Advisory Board.

While endorsing the objectives of the bill, Oliver P. Echols, president of the Aircraft Industries Association,

urged that the National Council should have a full time chairman and that a majority vote should govern the council's day to day decisions. He said any chairman picked from one of the agencies or departments, regardless of how able, would not be able to devote the required time to the council's work.

Two years ago ACC recommended to Congress a minimum production of 3,000 military aircraft after the peace is well assured, Echols stated, and a substantial striking force through annual production of 5,780 military aircraft if world peace has not been attained. Actually, 1946 saw the production of 1,330 military aircraft and 467 two and four-engined transports.

"Either the agency members of ACC do not estimate properly what their needs are or Congress does not appropriate in accordance with their recommendations," Echols declared.

Pogue Cites Principles For Helicopter Rules

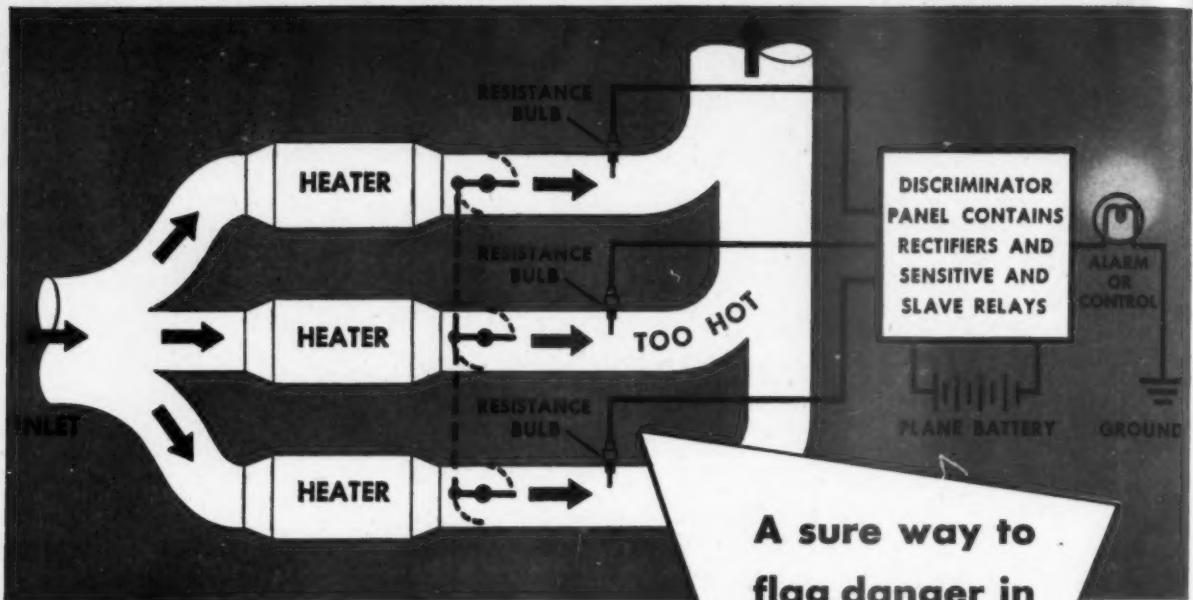
Close cooperation between the federal government and state governments in the making by the Civil Aeronautics Board of country-wide helicopter regulations, or exceptions to existing aircraft rules, has been urged by L. Welch Pogue as part of a five-point regulatory program.

Pogue, president of the National Aeronautic Association, and counsel to the Helicopter Council of Aircraft Industries Association, told the 3rd annual forum of the American Helicopter Society in Philadelphia on Mar. 28 that the other principles in the program are: (1) permit helicopters to operate outside of control zones and control areas and below altitudes generally regarded as a minimum for fixed-wing types, with a maximum of freedom from regulation; (2) use every precaution to insure that such safety regulations as are necessary are made by competent technical experts who know their business thoroughly; (3) reduce to one basic source the place where helicopter operators and pilots must go to secure the final up-to-date information as to what safety rules and regulations control their operation, and (4) arrange for close cooperation between the federal government and municipal authorities in the making by the CAA Administrator of any necessary local safety flight patterns and rules which are required by local conditions.

Pogue said that "eliminating the noise factor is probably even more important than any other regulatory problem in the book."

Civil Plane Symposium on May 27

The Institute of Aeronautical Sciences and the Detroit Engineering Society are sponsoring a symposium on "What the Customer Wants in His Personal Airplane" to be held May 27 in connection with the Michigan Aircraft Show at Detroit May 24-June 1.



The new **EDISON** critical temperature alarm for combustion heaters

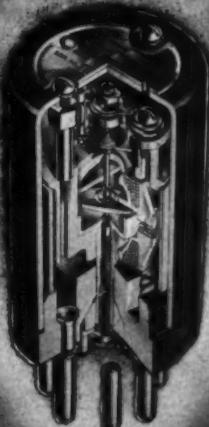


← This is the Sensitive Resistance Bulb that signals when critical temperature is reached. It has no moving parts.

The resistance bulb is a conductor which responds sensitively to increase of absolute temperature by increasing its electrical resistance. When heat, hence resistance, reaches the critical point, a signal results.

And here is the Sensitive Relay that transmits signals from the bulbs to warning devices or controls.

The Edison Sensitive Magnetic Relay uses an inverted D'Arsonval movement... the magnet moves instead of the coil. It is compact, sturdy, and operates on as little as 15 micro-watts coil power in a discriminator circuit.



Extremely rapid sensing and alarm in case of excessive duct temperatures is now available in the new Edison Critical Temperature Alarm. This system offers the following desirable features for detecting critical heat in hot wing de-icing or space heater ducts:

- 1 The Edison Critical Temperature Alarm System operates in response to *absolute*, not relative temperatures.
- 2 It allows the use of more than one sensing element (sensitive resistance bulb) in the same circuit.
- 3 Its time constant is very low... response is practically instantaneous.
- 4 The sensing elements withstand high temperatures... are undamaged by continuous exposure to 600°F.
- 5 There are no moving parts in the hot air ducts.
- 6 Alarm is signaled when any one sensing element detects critical temperature.
- 7 Alarm temperature is pre-selected to $\pm 50^{\circ}\text{F}$.
- 8 A test circuit is provided.

Edison engineers will be assigned to study your problems of duct temperature alarm or control as soon as you signify your interest.

Write for detailed information. Thomas A. Edison, Incorporated, Instrument Division, 66 Lakeside Avenue, West Orange, N. J.

EDISON

AIRCRAFT SYSTEMS AND INSTRUMENTATION

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Military Plane Briefs

A world's record for airplane weight lifting was claimed by the Army Air Forces in a recent test flight of the Consolidated Vultee XB-36 bomber which took off with a gross weight of 278,000 pounds. Poundage was distributed: empty weight of the XB-36 is 130,581; fuel 79,380; oil, 6,645; testing equipment, 25,259; crew members and personal equipment, 2,000. Gross weight at landing five hours after take-off was only 221,755 pounds because of fuel and oil consumption and dumping of 20,000 pounds of water ballast.

* * * *

The Navy has unveiled its newest helicopter, the XHPR-1 built by the Piasecki Helicopter Corp., of Sharon Hill, Pa. It is powered by a Pratt & Whitney 600 hp engine, can take off vertically with more than a ton of useful load and accelerate to speeds over 100 mph. Normally designed to carry a crew of two plus eight passengers, it can also be used to carry cargo, six litter patients, or as a medium range rescue machine capable of rescuing eight people within ranges of 300 miles.

* * * *

Three cargo load records were claimed for the Fairchild C-82 Packet by Capt. Johnson Beyer, chief of the flight test section, Air Transport Command, Morrison Field, Fla.

In authorized ATC tests, the C-82 took off with a cargo load of 21,000 pounds, which is 1,000 pounds more than the maximum prescribed for take-off. The plane weighs 30,000 pounds, so plane and cargo totaled 51,000 pounds. It landed safely weighing 9,000 pounds more than the maximum safety landing load of 42,000 pounds. The C-82 also was put through single engine tests at 4,000 and 8,000 feet. Capt. Beyer reported that carrying 21,000 pounds of cargo the C-82 maintained altitude on one engine without an increase in power.

* * * *

The first production model of Boeing's new YC-97 troop and cargo transports for the Army has made its initial test flight, remaining aloft for 47 minutes. The plane is powered by Wright engines driving Curtis Electric reversible pitch propellers.

* * * *

Consolidated Vultee's jet-propelled bomber, the XB-46 has successfully completed its initial test flight, taking off from San Diego and landing one hour and 33 minutes later at the Muroc Army Air Base where future test flights will take place. It is powered with four J-35 turbo jet engines housed in two low-slung nacelles giving the plane the appearance of a twin engine fighter except in size. It is 106 feet long, has a wing span of 113 feet and is 28 feet high overall. Gross weight is 91,000 pounds.

* * * *

Flight tests of the Northrop Flying Wing XB-35 bomber will be resumed as soon as new propellers now on order can be supplied. LaMotte T. Cohn, general manager and board chairman of Northrop, said the counter-rotating, coaxial propellers originally supplied for the Flying Wings have proved mechanically unsatisfactory. The XB-35 first flew on June 23, 1945.

* * * *

North American Aviation's four-jet bomber, the B-45, has made its original test flight. Its four jet engines, General Electric J-35's, manufactured by the Allison division of General Motors, are arranged in pairs in single nacelles.

Department of Agriculture Finds Airplane A Mixed Blessing in Pest Control Fight

Aviation is proving to be a mixed blessing to the Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, which on the one hand is making increasing use of the airplane in control of various insect pests through spraying and dusting, and on the other hand is finding itself up against a growing problem in seeking to prevent plant pests from entering the country by plane.

The Bureau's annual report, made public recently, gives details as to both the favorable and the unfavorable effects of the airplane on its services and functions, with emphasis leaning toward the credit side of the ledger.

For example, aerial application of DDT proved to be extremely effective against the gypsy moth, and more than 60,000 acres of infested woodland were sprayed in 1946 as part of the control program. Five commercial aerial spraying companies in Pennsylvania and eastern New York treated in excess of 32 square miles of infested woodlands with good results, the report stated.

Several large test plots were sprayed with DDT from an airplane for control of the white pine weevil, in co-operation with the New York State Department of Conservation, and preliminary observations have indicated effective control obtained.

In the El Paso Valley, large-scale aerial dusting tests with DDT-sulfur mixtures were conducted for the control of sucking bugs, and good control of the lone star tick was obtained on

Bull's Island, S. C., when dusts or sprays were applied from both the ground and from aircraft.

The Bureau worked with the Bureau of Plant Industry, Soils and Agricultural Engineering during the year in developing aerial equipment for use in controlling forest pests, particularly defoliators, and experiments on the behavior of sprays when released from aircraft were begun at the Agricultural Research Center, Beltsville, Md.

Hunt for Stowaway Insects

On the debit side, the Bureau found that inspections of incoming planes increased 28% last year over 1945, with 53,631 planes being inspected at 45 points of entry. Reflecting the replacement of military traffic by commercial traffic, the report showed that while the number of arrivals increased only 28% over 1945, the 12,156 planes from which prohibited plant material was taken last year represented an increase of 66%.

A total of 3,368 interceptions of insects and plant diseases was made from inbound planes last year, and the plane inspection staff had to be increased. Some of the stowaway insects, such as mosquitoes, were menaces to public health, while others, such as the Mediterranean fruit fly, were of economic importance.

The report emphasized the growing importance of the airplane "as a rapid disseminator of pests between countries and even between continents."

Air Transportation Institute Planned at American University

Applications are now being accepted for admission to an Air Transportation Institute to be offered at Washington from April 22 through May 22 by The American University, in cooperation with the Civil Aeronautics Administration and the Air Transport Association.

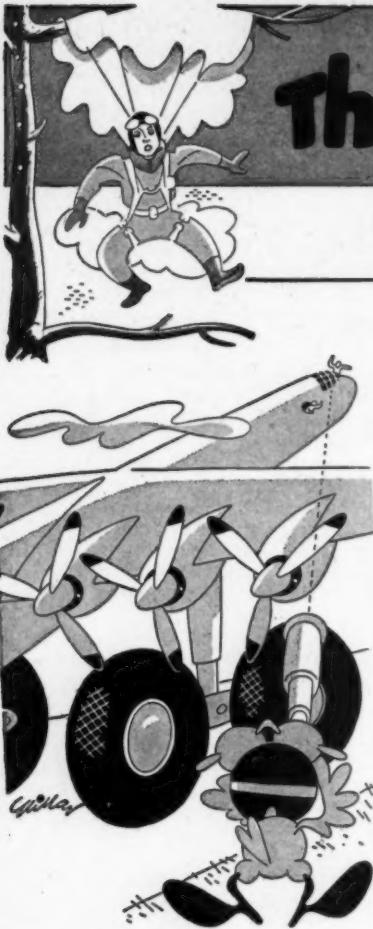
Dr. L. M. Homberger, professor of transportation and director of the Institute, says its objective is to give present and prospective executives in all fields of aviation and air transportation a broad knowledge of the nation's air and general transportation systems and their postwar problems, with emphasis on the competitive position of each type of carrier.

Willcox Named Vice President Of Rheinstrom Consultants

Philip M. Willcox, veteran airline executive, has been named vice president of Charles A. Rheinstrom, Inc., aviation consultants. Willcox became associated with United Air Lines in 1931, and served successively as secretary, assistant to the president, and administrative vice president, serving in the latter capacity until 1945. He has most recently been vice president of TACA Airways.

Admiral Pride to Head BuAer

Rear Admiral Alfred M. Pride has been designated as chief of the Bureau of Aeronautics for a four-year term. He is an expert on carrier operations and carrier arresting gear.



It gives us the creeps!

The super-super-super B-36, we mean. You've probably heard how this monster is so big that engines are sprinkled out over her wings like confetti . . . how her wheels are a couple of feet higher than you are . . . how she's big enough to fly anywhere in the world without refueling, etc.

Large airplane, see?

And guess what bothers the test crew?

Altitude, that's what!

Not in the air, mind you—*on the ground*. Because, when they gun this gal down the runway, her unusual, nose-high take-off attitude puts the cockpit 50 feet in the air before the wheels leave the ground!



The Birdmen's Perch

By **Major Al Williams, ALIAS, "TATTERED WING TIPS,"**
Gulf Aviation Products Manager, Gulf Bldg., Pittsburgh 30, Pa.

WE CLEANED THIS UP!

We got back to our desk for the first time in days, this A.M.

It was a mess!

We cleaned it up enough to work on, but not clean enough to work at *full efficiency*. Our secretary showed, and really cleaned up! We started to get twice as much work done.

Which reminded us that regular refining methods clean up a crude oil enough to lubricate, but do not clean enough carbon-and-sludge formers from it to lubricate *at full efficiency*! There's still enough of the non-lubricating trouble stuff left in the poorer grades of oil to give your engine a dirty deal, literally and figuratively!

But in case you've forgotten (since last month) Gulf uses an extra step . . . an additional refining stage in the manufacture of Gulfpride Oil.

This extra step performs the same function on already refined oil that our secretary performed on our already "cleaned" desk—it gets *more* of the "mess," the non-lubricating impurities out of Gulfpride Oil!

And you get *full lubrication efficiency* when you feed Gulfpride to that lucky engine of yours!

LITTLE KNOWN FACTS

"In 3 hours of normal cruising, a B-24 passes air through its carburetors, weighing more than the airplane!"

That's from Lt. John Newberry of Riverton, Wyoming.

"150 air traffic controllers in Brazilian traffic control centers are able to handle the airways in the English language for the benefit of English-speaking pilots!"

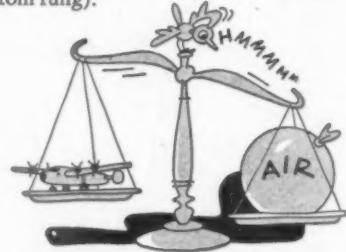
What's more:

"Major Al Williams, being a pilot (honest, fellas! Ed.) should not be ad-

dressed as 'Senhor,' but as 'Major Aviador' or 'Maj. Av. !'"

That pair's from Robert C. Ewing, Sao Paulo, Brazil, our *second* Brazilian Perch Pilot (br), and a double one at that!

See . . . the idea is that you stumble across a Little Known Fact About Well Known Planes. Then you send it to us at the address on the top of the page. And, if it's good enough to print here (*and if it's accompanied with proof!*), why, we send you a commission as a Perch Pilot (bottom rung).



And if you repeat, why, we send you another commission, until pretty soon you've got 5 of them—at which time you are promoted to Senior Perch Pilot.

If you're super-super wonderful, some day you may get 20—count 'em, 20—"Facts" in, at which time you'll be made a Command Perch Pilot!

We may even turn the Perch over to you.

Or Flutter, the Oily Boid.

Gulf Oil Corporation and Gulf Refining Company...makers of



- An old friend of ours has a brand-new name and insignia—and besides, it's his 20th Anniversary!
- So congratulations PCA on your new name, "Capital Airlines" . . . on being 20 years old, and on using Gulf Aviation Products for nearly 15 of those years!

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83% N. Y.-Europe Air Traffic Carried by U. S. Lines in '46

Pan Am Leads All Others With 33,635 Passengers

Residents of foreign countries outdid United States citizens last year in flying the Atlantic, and foreign airlines outnumbered American carriers five to three on routes between New York and points in the United Kingdom and Europe, but U. S. carriers nevertheless transported 83.3% of the passengers on these routes.

These are some of the interesting and significant facts brought out in a report by the analyses division of the Economic Bureau, Civil Aeronautics Board, covering the first full postwar year of trans-Atlantic airline operations.

The report listed traffic in both directions on eight carriers, these being American Overseas Airlines, Pan American Airways, Transcontinental & Western Air, British Overseas Airways Corp., Air France, KLM Royal Dutch Airlines, Sabena (Belgian non-scheduled operator), and the Scandinavian Airlines System (Danish, Swedish and Norwegian combined).

Of the 3,670 schedules flown by all carriers combined, the three U. S. airlines accounted for 2,898, or 81.4%. Pan American led all in the number of schedules flown, with 1,100, but was pressed closely by AOA's 1,089. TWA, although in third place with 830 trips, topped all five foreign-flag carriers combined.

The eight airlines transported a grand total of 104,980 passengers across the Atlantic, with the three U. S. lines carrying 87,477, or 83.3% of the total traffic. Each of the American carriers had more passengers than any of the foreign lines, and even the least traveled U. S. carrier—TWA—boarded more passengers than all the non-U. S. lines combined.

Pan American Leads

Pan American led all carriers with 33,635 passengers, American Overseas being second with 29,115, and TWA third with 24,727. KLM was tops among foreign-flag airlines, with 6,399 trans-Atlantic passengers, followed by Air France with 5,214, BOAC with 3,355, and SAS with 2,149. All the foreign airlines combined had only 17,503 passengers inbound and outbound at New York.

Presaging a great potential of air travel westbound across the Atlantic when economic conditions in the U. K. and Europe have improved, more than one-half of the total passenger traffic across the Atlantic last year consisted of aliens, the division being 49,778 U. S. citizens and 55,202 aliens.

Significant, too, from the American point of view, was the fact that 43,118 or 78.1% of the alien passengers preferred to travel on U. S. airlines. Americans' preferences were even more marked, with 44,359 or 89.1% of the U. S. passengers traveling via U. S. carriers. On all U. S. lines combined, 50.7% of the traffic consisted of Americans and 49.3% of non-U. S. citizens. Of the 17,503 passengers transported on the foreign trans-Atlantic airlines, only 30.9%, or 5,419, were U. S. citizens.

All the carriers listed in the report, both U. S. and foreign, used American planes—Constellations and/or DC-4's.

Pan Am Reduces Honolulu Fares

Pan American Airways is reducing its San Francisco-Honolulu one-way fare from \$195 to \$135 on May 1, the date set by United Air Lines for inauguration of its S.F.-Honolulu service. The new Pan Am rate will also be subject to a further round-trip reduction of 10%, bringing the two-way cost down to \$243.

United has also filed a tariff of \$135 for air travel from San Francisco to Honolulu. Service on the 2,400-mile S.F.-Honolulu operation will be with Douglas DC-6's. W. A. Patterson, UAL president, pointed out that UAL's tariff between the mainland and Hawaii will be less than the cost of average first class steamship accommodations.

Putnam Hits 'Forced' Mergers of Airlines

Asserting that there should be no "forced reductions" or "shot gun weddings" among the smaller airlines, Carleton Putnam, president of Chicago & Southern Air Lines, has called on the Civil Aeronautics Board to return these carriers to plane-mile mail rates to avoid the situation.

Speaking before the American Public Relations Association in Washington, Putnam said that carriers showing profits in 1946 were either in the Big Four (American, United, Eastern and Northwest, with TWA eliminated because of the pilot strike and Constellation grounding) or were on plane-mile rates. Others on pound-mile rates lost, he said.

"There is your financial emergency in a nutshell—mail rate support knocked out from under the majority of the carriers because of the special, compensating circumstances of wartime, followed by the return of normal conditions without restoration of that support."

Because heavy passenger routes are also heavy mail routes, "they who need mail support the least get the most of it," he said, adding that "they can survive on the pound-mile system and they know the others can't . . . It will all but force the rest of the industry to sell out." Pointing out that the industry had six times as many passenger-miles as in 1940 and only half again as many route-miles, he said it was "quite unsound" to say that the industry's trouble was "too many new routes" granted by CAB.

Stating that he held no brief for today's exact route pattern, he pointed out that any mergers should be made of the carrier's own volition. "What I object to is that slightly sinister suggestion . . . of the shot gun wedding . . .

I think our problems can be solved better if we consider calmly the rights and real wishes of the parties concerned . . ."

1946 Trans-Atlantic Air Traffic

(Via U. S. and Foreign Scheduled Air Carriers)

Carrier and Country	Number of Trips	No. Passengers Carried			Percent U. S. Citizens to Total Passenger Traffic
		Total	U. S. Citizens	Aliens	
American Overseas	1,059	29,115	14,785	14,330	50.8
Pan American	1,100	33,635	16,346	17,289	48.6
TWA	830	24,727	13,228	11,499	53.5
All U. S. carriers	2,969	87,477	44,359	43,118	50.7
Air France	173	5,214	1,986	3,228	38.1
BOAC	194	3,355	890	2,465	26.5
KLM	189	6,399	1,668	4,731	26.1
SABENA*	12	386	141	245	36.5
Scandinavian (SAS)	113	2,149	734	1,415	34.1
All foreign carriers	681	17,503	5,419	12,084	30.9
Grand total U. S. and Foreign carriers	3,670	104,980	49,778	55,202	47.4
Percent U. S. carriers to Total	81.4%	83.3%	89.1%	78.1%	

* Not a scheduled operation in 1946.

CAB Proposes Pay Guarantee In New C&S Mail Formula

Investigating Airline's Finances and Operations

By DANIEL S. WENTZ, II

A NEW wrinkle in figuring an airline's mail pay has come out in a CAB order proposing temporary rates for Chicago and Southern Air Lines. The new formula keeps C&S on the 60c per ton mile rate at which it is now being paid, but by guaranteeing minimum payment regardless of load, it assures the airline a definite income even if the mail load drops.

The Board simultaneously announced that it was beginning an investigation of C&S's Route 8, looking at the financial, structural and operational aspects of its entire domestic system. This investigation is almost identical with two CAB investigations of Colonial Airlines and Northeast Airlines now in progress.

Like those two studies, the C&S probe will try to find out why the airline is leaning more and more heavily on the Government for financial support. It will also seek to learn whether this dependence is due to uneconomic characteristics in C&S's route pattern, and will search out ways and means of reducing "need" mail payments to C&S.

The temporary rates suggested in the show cause order are aimed to help the airline out of its immediate financial crisis. Under CAB's proposals, C&S would receive a lump sum of \$1,054,000 for carrying the mail between June 1, 1946, and Dec. 31, 1946. The Board computed the sum by applying C&S's present 60c per ton mile rate to an arbitrary amount of mail computed on the basis of 700 lbs. of mail per airplane mile flown on mail schedules designated by the Post Office.

Beginning Jan. 1, 1947, the Board proposed a rate of 60c per ton mile computed on a monthly mileage base of 19,000 miles. The ton miles, however, are to be figured by means of what CAB calls a "minimum capacity factor." This factor is a guarantee of weight, and will be used in figuring C&S's mail pay regardless of the actual weight of mail carried in its planes. The whole formula works out to a guarantee of a minimum amount of mail pay in terms of dollars regardless of the weight of mail flown. The Board provided a descending scale of "minimum capacity factors," designed to cut down the mail pay progressively until mid-1948.

Volume Drops Off

The Board pointed out that the volume of mail actually hauled by C&S has fallen off so much that the airline is earning very little on its present 60c per ton mile rate. The new formula is a way of keeping C&S on

the standard "service rate" of 60c but at the same time assuring it of a greater income in mail pay. The present rate is yielding C&S only 3 or 4 cents per airplane mile; figured under the new formula, C&S should earn about 18c per airplane mile.

CAB criticized Chicago and Southern's management in the show-cause order on mail rates, said that C&S operating costs were way out of line with those of Braniff, Delta, National, Northwest, PCA and Western, carriers in the same general class. The investigation of C&S should disclose the reasons for this disparity, the Board hopes.

C&S also received a temporary mail rate of 95c per airplane mile for its New Orleans-Havana operation. Payments at this rate will be retroactive to Nov. 1, 1946, when C&S began to fly the route. The Board said it would not fix a rate for any operations beyond Havana "due to indefinite plans for the inauguration of services" beyond that point.

Rate's for Pan American

Pan American Airways received show-cause orders suggesting temporary rates for its Pacific and Alaskan divisions. CAB proposed to pay Pan Am a lump sum of \$6,800,000 for mail services on trans-Pacific routes between Nov. 16, 1945, and Dec. 31, 1946. This amount equals payments at the rate of \$1.90 per airplane mile.

For the period beginning Jan. 1, 1947, the Board suggested a rate of \$1.20 per airplane mile, to be paid without reference to a base poundage but according to a table of daily designated mileages for each segment of the route. Pan Am had asked the Board for a rate of \$2.00 per airplane mile. As usual, the proposed rate must be accepted by the airline and later made effective by a second CAB order. The rate proceeding remains open and a final rate will be figured out sometime in the future when all the necessary statistics are in.

Treating Pan American's Alaska division in the same way, the Board proposed a lump sum payment of \$1,500,000 to reimburse the airline for its mail-carrying operations between Jan. 1, 1946, and Dec. 31, 1946. Beginning Jan. 1, 1947, the Board suggested a temporary rate of 59c per airplane mile to be paid for a daily designated mileage of 6,573 miles but without regard for any base poundage. Pan Am had asked for 85c per airplane mile. This proceeding, also, will remain open and a final rate will be fixed later.

A final order setting a temporary system rate for Colonial Airlines was also issued. Beginning March 1, 1947, Colonial will receive a rate of 20c per airplane mile for a base load of 300 lbs. and a base mileage of 12,000 designated mail miles per day. An ad-

justment formula is provided in case the poundage or mileage exceed the base amounts. Excess weight is to be paid at 0.03c per pound per mile.

The 20c rate does not apply to Colonial's New York-Bermuda and Washington-Bermuda routes, neither of which is yet in operation.

Colonial had asked the Board for a system rate of 45c per airplane mile plus an allowance for a fair and reasonable profit.

Small Drop Shown In Airline Personnel

Despite the numerous "readjustments" of the past several months, total personnel of the airlines has dropped less than 5%, as judged from figures supplied for the Spring-Summer edition of the *AMERICAN AVIATION DIRECTORY* scheduled for publication next month.

Following is a compilation of personnel figures as reported by the airlines last August, and again in March of this year:

Airlines	Mar. '47	Aug. '46
All American	290	267
American Airlines	13,350	13,520
American Overseas	3,356	3,268
Braniff	2,185	2,466
Chicago & Southern	1,629	2,125
Colonial	441	(*)
Continental	645	885
Delta	2,286	2,511
Eastern	6,731	7,500
Hawaiian	450	450
Inland	86	230
Mid-Continent	961	930
National	2,000	1,854
Northeast	1,197	1,197
Northwest	4,349	3,868
Penn-Central	4,000	4,781
Pioneer	250	171
Southwest	240	(*)
Summit	45	15
TWA	13,520	14,175
United	(*)	10,588
West Coast	80	(*)
Western	2,260	2,272

* Unreported

PAA Offers 20% Discount On Latin American Trips

A 20% summer round-trip discount over Pan American Airways routes between the U. S. and Latin America, including the Pan American-Grace Airways route in western South America, has been announced. The discount, effective from May 1 to Sept. 1, replaces Pan Am's present 10% round-trip discount for trips of 90 days or less.

In combination with the April 1 removal of the 15% Federal excise tax on travel to South America, the new vacation fares will mean substantial reduction in travel costs. Fares to Central America and the Caribbean, while still subject to the excise tax, also will come under the summer rate reductions.

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Capital Airlines has always been a progressive airline. It led the way with hollow steel propellers in 1928—with hot air heating—with wing de-icing, to mention only a few.

Now celebrating its 20th anniversary, this second oldest airline in the nation will serve even better in the years ahead. With its new Martin 202's and C-54 Skyfreighters,

it's set to fly passengers and freight more efficiently than ever before.

"U. S.", too, is a leader in progress. Its pioneering of rayon and nylon cord bodies was the beginning of the truly modern airplane tire. Each one of today's scientifically designed U. S. Royal Aircraft Tires provides strength, stability, and security—wherever airplanes fly!

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T-11A VHF Transmitter



R-15 VHF Receiver



A-12 Antenna Unit

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Your complete VHF Communication and Navigation System can be Assembled with A.R.C. Engineered Units

THE UNIQUE A.R.C. method of airborne radio Systems Engineering through Unit Assembly provides a means of building a complete VHF system—step by step—to meet individual requirements.

The A.R.C. Type 17 System illustrated—tunable VHF Receiver, 5-channel VHF Transmitter and Control Unit—can be installed now to obtain the immediate advantages of VHF. To these items can be added such equipment as the VHF Omni-Directional Range Receiver (with provision for Localizer and Two-Course Visual-Aural Range operation), extra LF Range Receivers and VHF Transmitter Units as required to cover necessary frequencies.

Unit assembly was pioneered by A.R.C. during the early 1930's, and was widely used by the Army and Navy during the war. It provides a flexible installation, easily fitted to space available, quickly removable for maintenance, and adaptable to individual operational requirements.

VHF Omni-Directional Ranges are now under construction by the CAA on a country-wide basis. VHF communication is already available with many of the CAA Towers and Airways Stations. TODAY is the time to plan for VHF radio facilities in your aircraft. For full information write Dept. AA-4.

A.R.C. Type 17 VHF Aircraft Communication System SPECIFICATIONS

R-15 RECEIVER

Frequency Range—108-135 mc, continuously tunable
Tuning Accuracy—Better than 0.15%
Sensitivity—Better than 2 microvolts for 10 mw, $m = .3$, 400 cps,
300 ohm load
Selectivity—Band width 100 kc for 6 db, 350 kc for 60 db
Weight (less dynamotor)—5.7 pounds

T-11A TRANSMITTER

Frequency—Provision for 5 crystal-controlled channels in the new air-ground VHF band allocated by FCC. Crystals supplied for operation on 122.1 mc and 122.5 mc.
Power Output—Over 1 Watt
Dependable Range—Over 30 miles (at 2,000 feet or higher, normal reception)
Weight—3 pounds

Dynamotor Power Supply Type D-10, Remote Control Unit Type C-15, Antenna System Type A-12, shockproof mountings and all necessary cables also furnished.

GOOD DESIGN TAKES TIME: Over four years of specialized engineering development have led to the current production of the tunable VHF Receiver which is the heart of the Type 17 and other A.R.C. multi-channel VHF systems. All A.R.C. units are built to meet the rigid requirements of the CAA for Approved Type Certification.



New 5c Per Mile Airline Fare Still Below Prewar Level

Fares for domestic airline trips went up 10% on April 1 as the result of a 16-airline agreement approved by the Civil Aeronautics Board. The general domestic fare structure is now pegged at 5.0c per mile—approximately the same figure that was in effect in 1944. Before the increase the base rate was about 4.68c per mile.

The 16 lines signing the agreement pledged themselves not to make any changes up or down in the new 5c fares for at least 90 days. The airlines and CAB both hope that this 90-day testing period will show whether the 5c fare is producing the increased revenues expected or whether it is keeping prospective customers on the ground. Significantly, the new higher fares are at least 10% lower than passengers paid before the war.

The Air Transport Association made the point that airline fares, even at 5c per mile, are well below the heights to which consumers prices for a great many other items have climbed since 1941. Air fares, ATA declared, are among the few items that have not shown a real increase since pre-war days.

The Association issued the following table showing U. S. Department of Labor indices of consumer prices, illustrating the upward trend in prices with 1941 representing 100:

Average of monthly indices
1941 1946

Consumer price index—	1941	1946
all items	100	132.5
Food	100	151.3
Clothing	100	150.7
Fuel, electricity, and ice	100	110.1
House furnishings	100	148.7
Index of wholesale prices—all commodi- ties	100	138.7

Then, taking 1941 fares as 100, ATA's comparison showed that with the new 5c per mile rate the index stands at 91 for the New York-Washington run (\$11.10 on April 1, 1947 compared with \$12.20 in 1941); 71 for the Pittsburgh-Washington run (\$13.40 in 1941 compared with \$9.55 today); 88 for the San Francisco-Los Angeles trips (\$16.70 today—\$18.95 in 1941); and 74 for Oklahoma City-El Paso service (\$45.31 in 1941, but only \$28.80 today).

The index for 25 representative airline fares was 81 on April 1, using 1941 as 100.

The reaction of customers when the new higher fares first took effect was generally sympathetic, although airline men agreed it was too early to tell what the increase would mean in the long run. There was some possibility that short-haul commuter flights might lose a bit of business to the railroads.

Passengers who had bought their



Rotor-Prop Transport—W. Laurence LePage, consulting engineer, last fortnight told the House Interstate and Foreign Commerce Committee investigating airline safety, that maximum safety would not be reached until airliners, like all other vehicles, could slow down in bad weather or when approaching a terminal. LePage proposed the Rotor-Prop transport, shown above, as a solution. Top speed of this 21-passenger model would be about 220 mph. The plane would ascend and descend much like a helicopter, with rotor position as shown in lower left.

tickets before April 1 for trips to be made after that date had to be called up and asked to exchange their tickets for new ones at the higher fares. Most customers in this group seemed to accept it as a part of the general advance in prices.

Meanwhile, 60 Eastern railroads are asking the Interstate Commerce Commission for an increase in rail fares, both coach and Pullman. The roads want to hike coach fares from 2.2 to 2.5c per mile and Pullman rates from 3.3 to 3.5c per mile, with increases in round trip rates amounting to 15% for coach travel and 4% for Pullman travel. The railroads say they need the increases to make up for sharply increased operating costs.

One railroad man, W. S. Franklin, vice president of the Pennsylvania Railroad, told the ICC that the railroads expect airline competition to grow stiffer despite the new fare increase. The railroad men used the airline fare boost as a part of their argument for higher rail fares. William T. Faricy, newly elected president of the Association of American Railroads, said he did not think the increase in airline fares would push much if any business to the rails because the demand for travel space is still quite high.

At the same time basic fares went up to 5c, Transcontinental & Western Air announced it was cutting the extra fare charges it makes for domestic Constellation trips. Between Chicago and New York, TWA cut its extra

service charge from \$7.50 to \$3.50, making the new total fare, including the 10% basic increase, \$39.95 instead of the old fare of \$40.35. Between New York and Los Angeles the extra service charge was lowered from \$25 to \$13.50 making the new fare \$143.65 compared with the old rate of \$143.30.

TWA reported that it received more than \$1,000,000 in the last 12 months from extra Connie fares charges.

Local Seat Allotment Features New Delta Plan

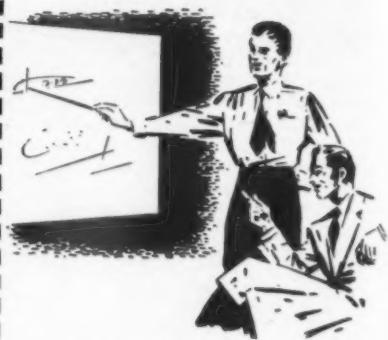
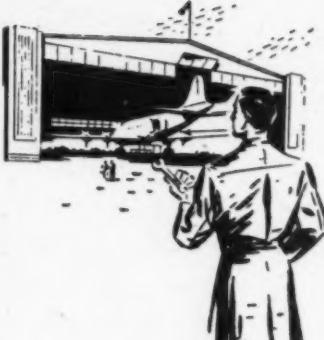
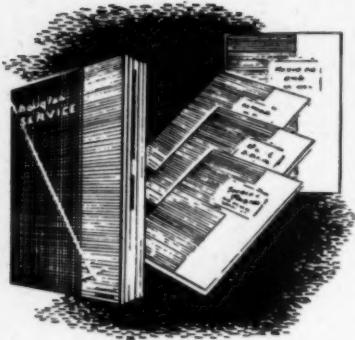
A new reservations system which calls for local allotments of seats on all Delta flights and which combines the best features of other reservations systems has been inaugurated by Delta Air Lines, Charles Payne, reservations and schedule manager, has announced.

The new "Seat Allotment" system makes possible the instant confirmation of requests from passengers when their requests do not exceed the local allotment. In the event all outgoing local seats have been sold, additional seats will be requested by teletype from the master reservations office. Under the former system, all requests for seats out of Delta cities were relayed by teletype to terminal cities.

Payne estimated that a saving of approximately 30 minutes will be averaged on each request for a Delta reservation under the new system. The new allotment of seats is based on air travel into and from each Delta city.

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The Douglas Service Magazine reaches 10,000 people monthly... is packed with useful data on service methods. Other Douglas publications aid operators get better service at lower cost.

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Hand tools, hangars, fixed docks, loading and handling equipment—these and many other types of specialized service aids help operators speed maintenance and operations.

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Today the finest designs in the world for mobile training aids are in Douglas files. Classroom instruction and shop demonstrations are also provided for trainees at Santa Monica.

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Experienced men are trained especially for Douglas service work. They alone have access to the latest facts so vital for fast, expert repairs at reasonable cost. Special tools, methods, and facilities... factory-made parts—all speed work under the Douglas Program.

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If you are not taking full advantage of the services offered by Douglas, write for a free copy of our booklet "Service Program for Douglas Transports."



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In 6 hours, 47 Minutes:

United Air Lines DC-6 Sets New Coast-to-Coast Record

By LEONARD EISERER

A United Air Lines Douglas DC-6, appropriately named "The Age of Flight", on March 29 lopped 45 minutes off the official coast-to-coast airline record, simultaneously demonstrating the speed, comfort, and operating advantages expected from this postwar transport.

Official time of the flight was 6 hours, 47 minutes, 13 seconds, over a 2,474-mile Great Circle course from Long Beach, Calif., to La Guardia Field, N. Y. The previous official transport record for a similar flight was made by a Lockheed Constellation, delivered to Venezuela, which flew from Burbank, Calif., to New York in 7 hours, 32 minutes, 50 seconds, on Nov. 8, 1946. The best previous unofficial coast-to-coast time for an airliner was 7 hours, 30 seconds, also made by a Constellation.

The big four-engined transport, carrying 37 passengers and crew of four, at times reached speeds of nearly eight miles a minute. Among those aboard were James M. Landis, chairman of the Civil Aeronautics Board; Emory S. Land, president of the Air Transport Association, William A. Patterson, UAL president; this writer and other members of the press.

Capt. W. E. "Slim" Larned, assistant director of flight operations for UAL, and W. D. "Bill" Williams, superintendent of UAL's western flight operations, took the plane off from Long Beach airport at 8:24 a. m. (P. S. T.) The plane buzzed La Guardia Field, going approximately 360 mph at 500 feet, at 6:11:27 p. m. (E. S. T.). Both Larned and Williams have been engaged in UAL's extensive pilot training program preparatory to placing the Mainliner 300's into scheduled service.

Stewardesses on the flight were Myrtle Sawday and Ann McGowan.

Official Data

Official log of the record hop revealed the following pertinent data:

- Top speed: 474 mph; average speed 364 mph

True air speed: 331 mph at 1200 hp per engine; 354 mph at 1300 hp.

Wind: varied from 4 mph headwind to 124 mph tailwind.

Grav. weight at take-off: 88,875 lbs.

Fuel load: 25,400 lbs., or 4,233 gallons.

Fuel consumption at 1200 hp was 2,510 lbs.

or 418 1/3 gals. an hour. Fuel remaining at conclusion of flight: 4,300 lbs.

or 7 2/3 gals.

Cab power: used full rated power of 1800 hp after take-off to approximately

7,000 ft., gradually dropping back to 1,600

hp at 10,000 ft., holding 1600 hp to 17,000

ft., dropping off to about 1500 until 19,000

ft. Cruised at 1200 hp, or 66% rated

power until south of Peoria, Ill., then continued to fly at 1300 hp or 72 1/2% rated power of the Pratt & Whitney R-2800 engines for remainder of trip.

Rate of climb: 850 ft. per minute for plane; 500 ft. per minute for inside cabin.

Cabin temperature remained at 70 degree F., although outside temperature averaged 58 degrees and went as low as 8 degrees below zero.

Distinctive Features

A few of the outstanding features revealed to the press, in addition to the speed, were:

The pressurized "altitude conditioned" cabin, probably the most important single contribution to passenger comfort. The cabin is kept at sea level pressure when the plane is flying up to 9,000 ft.; the climb of the plane has little or no effect on the passenger because the cabin "climbs" at a much slower rate. Even when the plane reaches an actual 20,000 ft., cabin altitude is only 8,000—well below that at which unpressurized transports often operate.

Automatic temperature and humidity control, materially contributing to comfort.

Installation of heat anti-icing which is expected to mean virtual elimination of ice as an obstacle to flying.

Latest electronic devices, including automatic airport approach controls, which promise greater schedule regularity.

Fully reversible Hamilton Standard propellers for increased maneuverability on the ground and useful for reducing the roll on landing.

Employment of jet thrust principle through use of exhaust gases to increase speed.

In addition, United demonstrated the use of plane-ground telephone service, in cooperation with the Bell System, and also the possibility of offering 16 mm. movies to passengers on long flights. W. Hunter of Bell Laboratories handled the demonstration calls.



Check Flight Progress—Emory S. Land, president of the Air Transport Association, W. A. Patterson, UAL president, and James M. Landis, chairman of the Civil Aeronautics Board, check progress of the record-breaking DC-6 flight with the clock installed for passenger convenience in the cabin.

Both United and American Air Lines flew press groups to California for special ceremonies at the Douglas plant, March 28, marking official delivery of the "NC" models.

Each of these airlines plans to inaugurate transcontinental service with DC-6's on April 27. DC-6's will also be used by United on its San Francisco-Honolulu run to be started May 1.

Of the first 13 certificated models produced by Douglas, six are being delivered to United, five to American, and one to Pan American-Grace Airways. The odd ship is being retained by Douglas.

After initial deliveries, American will receive planes somewhat faster than United, since it has 50 of them on order compared to United's 35.

United expects to have eight certificated DC-6's by April 27, while American hopes to have nine ready for operation by the end of this month.

Panagra, which plans to put the DC-6 in operation this spring between Miami and Buenos Aires, claimed a commercial record when it flew its plane from Los Angeles to Miami non-stop on March 23 in seven hours, 14 minutes. Average speed was 332 mph.



Before Take-Off—Thirty-seven newspaper, radio, magazine, and aviation representatives are shown at Long Beach, Calif., just prior to boarding United Air Lines' DC-6, "Age of Flight", which on March 29 established a new coast-to-coast airline speed record of 6 hours, 47 minutes, 13 seconds.

Darr Acquires Control Of Monarch Air Lines

H. S. "Hal" Darr, well-known figure in aviation for many years, has acquired control of Monarch Air Lines, Denver, Colo., through purchase of approximately 55% of the airline's outstanding stock. Darr is now president of the company. Ray M. Wilson, former president, is continuing in active management of the carrier's operations as executive vice president.

Darr went into the company when Wilson and F. W. Bonfils, former principal stockholders, felt unable to provide additional needed financing. His holding amounts to 25,120 shares of a total of 46,854 shares issued and outstanding.

Three hundred of the 25,120 shares are held in Darr's own name. The remainder are held by Darr-Aero-Tech Inc., a Georgia corporation wholly owned by Mr. Darr. During the war, Darr-Aero-Tech operated flight training schools, but has been inactive for some time.

PCA Abolishes District General Manager Offices to Cut Costs

As a part of its retrenchment program and in line with its objective of reducing overall costs by \$300,000 a month, Pennsylvania-Central Airlines has announced organizational changes which have resulted in the elimination of its 15 district general manager offices.

J. H. Carmichael, executive vice president, said that local offices of the airline will operate in the future under the jurisdiction of a district sales manager, who will supervise sales and traffic phases in the area, and a district operations manager, who will head the mechanical and technical departments in each city.

While district general manager posts will be abolished, it does not mean that all district general managers have been discharged. Rather there is a reshuffling of personnel in which the experience and ability of all of these district representatives is being evaluated in terms of the company's need under the new set-up.

Algebraic Difference

Carleton Putnam, president of Chicago & Southern Air Lines, doesn't agree with the algebra of James M. Landis, chairman of the Civil Aeronautics Board. In a recent speech, Landis had said that "very often, just like in algebra, a minus and a minus become a plus. Two weak carriers put together may make a strong one."

Says Putnam: "I was taught that adding a minus to a minus only gave you a bigger minus." And referring to the airline situation, he added: "Before we sell our American birthright of diversified opportunity and all the other advantages of the present system for a mess of consolidations, I, for one, would like to see less casual mathematics than this."

Braniff, C & S Route Consolidations Approved

Consolidations of Braniff Airways' Routes 9, 15 and 50 and Chicago and Southern Air Lines Routes 8 and 53 were accomplished by two unanimous decisions of the Civil Aeronautics Board.

Restrictions imposed by the Board, however, blocked each line's request for consolidations that would permit eventual non-stop operations between Chicago and Houston.

In the case of C&S, the Board found it unwise to tamper with the existing competitive balance between Braniff and C&S for Chicago-Houston traffic. Accordingly, C&S consolidated certificates require Chicago-Houston flights to make a stop at Memphis.

Braniff's new certificate is restricted to force the line to stop all Chicago-Houston and Kansas City-Houston flights at Dallas. Protection of Mid-Continent Airlines' new Houston extension is given as the reason for restricting the Kansas City-Houston operation by Braniff. The Board also applied restrictions to prevent competitive damage to Continental Air Lines by Braniff. Under the reissued certificate, Braniff flights between Denver and Tulsa must stop at Amarillo, or must make at least two stops, one of which must be Oklahoma City.

PAA Bermuda Runs Halted by CAB Order

Pan American Airways' Washington-Bermuda and Boston-Bermuda operations have been stopped with startling suddenness by the Civil Aeronautics Board. The Board found that PAA was operating shuttle flights between those points on the strength of a clerical error in its trans-Atlantic route certificate. Both operations came to a halt when CAB issued a new certificate, correcting the error and making Bermuda a weather stop only.

After looking over the record of the last case in which Pan Am's certificates had been up for amendment, the Board found that the question of Boston-Bermuda and Washington-Bermuda shuttle services had never been discussed. The airline had not even asked permission to run such services. However, through an oversight, the Board neglected to say specifically in the certificate, that Bermuda was to be used only as a weather stop.

Legally, therefore, Pan Am actually had the right to fly both operations—until CAB summarily corrected the error and gave the company a new certificate.

Although Pan American contended that CAB had no legal right to change a certificate on the pretense of correcting a clerical error, the Board made it clear that it had no intention of binding the Government to any financial commitments. (A Board spokesman figured out that the two operations might have cost the Government as much as \$247,000 a year in mail pay to Pan American).

In its opinion, the Board stated flatly that it thought Pan American should have been aware that the earlier certificate was in error, and that before attempting to open service, it should have asked CAB just what authority the Board had really intended to grant.

Express Shipments Top 3,000,000

Air express shipments for the certificate airlines topped the three-million mark in 1946 for the first time in the 19-year history of the Air Express Division, Railway Express Agency. REA reported 3,182,053 shipments, representing a gain of 48% over 1945.

Summary of Feeder Line Traffic Results for January

(Compiled by American Aviation Publications from Official CAB Reports)

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER-MILES	AVAILABLE SEAT-MILES	PASSENGER LOAD FACTOR	MAIL TON-MILES	EXPRESS TON-MILES	FREIGHT TON-MILES	TOTAL TON-MILES	AVAIL. TON-MILES	AVAILABLE TON-MILES	% AVAILABLE TON-MILES USED	REVENUE AIRLINE-MILES	SCHEDULED MILES	% SCHEDULED MILES COMPUTED
Empire Florida	480	105,000	595,000	15.1%	964	73	...	10,031	48,243	20,569	60,069	85,264	70,15	79.1%
Monarch Pioneer	392	76,000	470,000	15.8%	296	115	12	7,867	67,591	11,666	30,114	35,806	84.2%	
Southwest West Coast	1,551	443,000	1,724,000	25.7%	1,057	970	...	41,027	123,361	71,166	86,692	84.0%		
TOTALS	4,863	1,000,000	4,515,000	22.1%	4,516	1,882	12	89,103	513,484	17,406	264,023	340,176	77.6%	
* Figures in this column are reported in even thousands.														

STANDARD OF CALIFORNIA'S

PLANE FAX



A page of service tips for private flyers and fixed-base operators

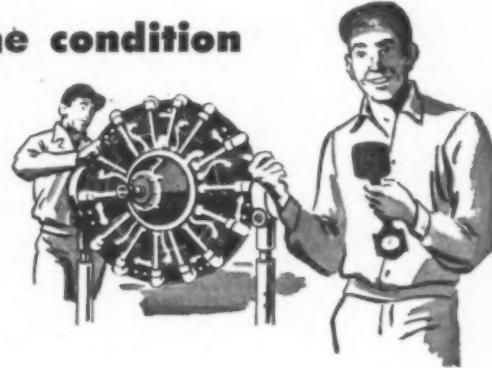
High-altitude flying increases light-plane efficiency



You'll get higher cruising speed, better fuel economy, and longer range by cruising a light plane at 6,000 to 9,000 feet. This is due to less drag with the decrease in air density at higher levels. However, improper handling of mixture controls can cause loss of range. When flying above 5,000 feet the carburetor mixture should be leaned until r.p.m. decreases, then enriched enough to recover loss of r.p.m. Maximum economy can be obtained with CHEVRON Aviation Gasoline.

Oil consumption indicates engine condition

Increasing consumption of oil is your first and best warning of mechanical trouble such as worn, broken or sluggish piston rings or worn pistons. To help prevent clogged rings and excessive wear resulting in high oil consumption, RPM Aviation Oil contains a detergent that keeps ring belt areas free from deposits. Another compound in "RPM" makes it cling to hot upper cylinder walls. Some aircraft operators find that the use of RPM Aviation Oil has doubled the time between overhauls when compared with ordinary, uncompounded oils.



Use care when selecting hydraulic fluids



Some planes are equipped with natural rubber hydraulic tubing and seals, others with synthetic rubber. Natural rubber is damaged by petroleum. It is therefore important to know which kind of tubing your plane is equipped with, and use the proper type of hydraulic fluid. If your plane is equipped with natural rubber tubing use Atlas Brake Fluid, if synthetic rubber, RPM Aviation Hydraulic Oil should be used. For easy identification, this petroleum base fluid is colored red.

CHEVRON NATIONAL CREDIT CARDS AVAILABLE
for private flyers, good at airports throughout the United States and Canada. If you reside in the West, write Standard of California, 225 Bush Street, Room 1618, San Francisco, California...or ask the Standard Airport Dealer at your field for an application blank.



New Services:

AOA Begins Regular Service to Iceland

American Overseas Airlines has begun regularly scheduled service between the U. S. and Iceland, the flights originating in New York on Mondays and Wednesdays, and proceeding on to Copenhagen and Stockholm. Flights from New York on Fridays serve Iceland, Oslo, and Stockholm. Previously, AOA's service to the Scandinavian countries operated via Shannon.

AOA now offers daily service to Germany, with flights leaving Washington each Wednesday and Friday for Shannon, Amsterdam, Frankfurt, and Berlin, and each Saturday for Shannon, London, and Frankfurt. Four flights weekly to Frankfurt from New York round out the service. The company now has 18 trans-Atlantic round-trips weekly.

United Air Lines plans to inaugurate daily schedules to Milwaukee, Wis., and Cedar Rapids, Ia., on April 27. Service will include four daily flights out of Milwaukee, two out of Cedar Rapids.

National Airlines has begun DC-4 service to Philadelphia, Pa., Norfolk, Va., Wilmington, N. C., Charleston, S. C., and Pensacola, Fla., on flights originating and terminating in New York and New Orleans. NAL began Lodestar service to Gulfport, Miss., April 1.

Florida Airways has started service to Sanford, DeLand, Palatka, and St. Augustine with four flights daily to each city.

Pan American Airways has added a second daily flight linking Miami and New York with Rio de Janeiro and Buenos Aires. Pan Am's Pacific-Alaska Division has announced plans for DC-4 service at Alaska.

Delta Air Lines inaugurated its first regularly scheduled all-cargo flight April 1, Atlanta-Cincinnati-Chicago. C-47 equipment is used.

Eastern Air Lines on April 1 began service into Bradley Field in the Hartford, Conn.-Springfield, Mass., area, as part of the company's New York-Boston operation.

Colonial Airlines has added two new daily non-stop flights between New York and Montreal.

Pan Am Lays Off 900

Pan American Airways is laying off about 900 employees at Miami. Humphrey W. Toomey, Latin American division manager, said the move was required by a series of delays in the delivery of promised new equipment from manufacturers, the uncertainty of future deliveries, and current developments in the international aviation picture. After the reduction, PAA will still have more than 8,000 employees in the Latin American division.

Mitchener to Remain with FAA

Joseph J. Mitchener, Jr., who last month submitted his resignation as executive director of the Feeder Airlines Association, will retain the position until the Association's annual meeting in Washington on August 1.

Airline Commentary

By ERIC BRAMLEY

PLEASE NOTE the sign in the upper righthand corner of the picture appearing here . . . Yessir, that sign says "no tipping please" . . . American Airlines and Western Air Lines have constructed this baggage-handling facility (the picture doesn't show all of it) at the Los Angeles airport terminal and they put up the sign . . . Let's hope that the idea spreads to all terminals . . . Our thanks to Gage Mace, American's Los Angeles operations manager, for the picture . . . On the subject of tipping, it is also encouraging to note that the passenger traffic section of the Air Traffic Conference is asking all organizations providing limousine service to put signs in their vehicles stating that "tipping is not required for this service" . . . Maybe the day is approaching when the passenger will at least have a choice of whether he wants to tip or not . . .



We had a ride the other day in a very nice airplane—United Air Lines' DC-6 . . . It is a lot of airplane, fast and comfortable . . . And at long last, someone has put a nice big square window in an airplane that you can see out of without straining yourself . . . Interior lighting is indirect, and very attractive . . . But the thing we like most is the fact that the air vents are connected to the engines, and as soon as the engines are turning over you can open your vent and a stream of air comes in . . . You don't have to wait until take-off . . . After that record-breaking flight, United is probably wondering about its "Mainliner 300" designation of the DC-6 . . . Anytime they were doing only 300 mph on that trip they were practically loafing . . . In connection with new airplanes, someone has asked us why the manufacturer doesn't put polaroid glass in plane windows, to ease the eyes . . . Anyone know? . . .

On the 26th of this month, Capital Airlines (Pennsylvania-Central) celebrates its 20th anniversary, and we offer our heartiest congratulations . . . The company, like others in the industry, has had tough sledding lately, but traffic is picking up and things look better . . . Capital is one of the pioneers in the business, and deserves a lot of credit . . . Incidentally, the company has a swell after-dinner speaker in Dr. L. G. Lederer, its medical director . . . We'd like to urge that Doc make more speeches . . . He's always worth listening to, and he always does the industry some good . . .

These airlines track down passengers in the darndest places . . . Mr. L. S. White, a Canadian, was in Washington, and called American Airlines for some space to New York on to Canada . . . American didn't have any space, but promised to call Mr. White if something opened up . . . Something did open, and the agent called the landlady of the boarding house where Mr. White was staying . . . The landlady said he had gone out sightseeing and was probably at the top of the Washington Monument . . . So the agent called the attendant at the top of the monument and got the message to Mr. White . . . When that gentleman checked in at the airport he was lavish in his praise of American's "bloodhound" system and just couldn't understand how he had been tracked to the top of the monument . . . American's agent just smiled wisely, and didn't say anything about the landlady . . .

Neatest-trick-of-the-week: It's always a rough job for hostesses to have to tell passengers that they will be unable to land at destination because of weather . . . Well, it seems that two TWA hostesses had a Constellation-full of passengers who had to be told that they were being returned to point of origin . . . Hating to do this, the gals decided that they would turn their hats around and say nothing for the time being . . . It wasn't long before the curious passengers started asking questions, and one by one, they caught on . . . It almost became a game to see who would be last to figure out what had happened . . . That's what we call neat handling of a delicate situation.



Photo courtesy American Airlines, Inc.

New B. F. Goodrich cabin finishes pass the tests for flying colors

INTERIOR DECORATING for airlines turned out to be a job for engineers. For when the designers looked to ordinary materials to carry out their plans, they found the light materials not sturdy enough and the durable materials too heavy for airplanes.

B. F. Goodrich engineers studied the problem, developed a group of materials—including special types of Coroseal flexible synthetics—which lend themselves to rich colors, unusual textures, yet meet the requirements of quick cleaning, durability, and light weight. In the picture, ceiling and side panels, luggage racks and armrests are

covered with the new materials. Bulkheads, doors and the rug are made entirely from them.

The new materials withstand scuffing, stay soft and flexible even when formed over sharp corners. Interior temperature changes won't affect them. Cleaning is easy. Ordinary soap and water or simple abrasive cleaners do the job.

There are types for almost every part of the interior: walls, armrests,

kick plates, rugs, wainscoting, curtains, seat belts. Colors won't wear off—and standard colors are now available in over 60 shades and tones. Easy to install, the new materials may be stitched or cemented in place. Some types are furnished already bonded to glass, plastic materials or metal suitable for bending to any desired shape.

The B. F. Goodrich Co., Aeronautical Division, Akron, Ohio.

B.F. Goodrich

FIRST IN RUBBER

Relief for Alaskan Carriers Proposed by Safety Bureau

Relief for Alaskan air service operators who have found it difficult if not impossible to comply fully with all requirements under Part 41 of the Civil Air Regulations will be proposed to the Civil Aeronautics Board by its Safety Bureau late this month.

It will be proposed that the Administrator be authorized to issue air carrier operating certificates to Alaskan carriers whenever he finds the carrier can meet a reasonable level of operational safety, although not fully meeting the requirements of Part 41. Requirements for airport spacing, communication facilities, weather reporting stations and navigational facilities, among others, were so retarded by the war that the majority of Alaskan carriers have been unable to qualify for certificates under Part 41.

Acceptable Safety

In announcing the proposed relief, W. S. Dawson, director of the Safety Bureau, said: "These operators are and have been conducting their operations with an acceptable degree of safety and are rendering the Territory of Alaska a much needed transportation service." The proposed certificates would be valid only for specified periods, unless the holder within that time shows compliance with the applicable rules.

MCA, WAL Share Ground Operations at Twin Cities

Western Air Lines has entered into an agreement with Mid-Continent Airlines to handle all of Western's airport functions and facilities at Wold-Chamberlain Field for service to Minneapolis-St. Paul inaugurated on April 1. This is the first time Western has participated in joint ground operation in setting up a new installation.

Western will install its own reservations department and maintain traffic offices and staffs in the Twin Cities, but ticket counter activities, communications, baggage handling, ramp services, ship-to-ground radio, aircraft servicing and emergency maintenance and repairs at the airport will be handled by Mid-Continent.

Marvin W. Landes, vice president-customer relations, said Western intends to pursue this policy at other stations served in conjunction with another carrier.

DC-4M in Service April 15

Trans-Canada Air Lines will introduce the 36-passenger Merlin-powered Canadair DC-4M into trans-Atlantic service on April 15. This type of long-range transport, popularly called the "North Star," will replace the Avro Lancastrians operated to Great Britain by TCA for the past several years. On transoceanic services the DC-4M's will have a crew of six and will be equipped with LORAN Navigation equipment.

Atlanta-N. Y. Route Proposed for Delta By CAB Examiners

A long route extension, bringing Delta Air Lines from Atlanta to New York, has been recommended to the Civil Aeronautics Board by two of its examiners. The recommendation was made in a report on the Boston-New York-Atlanta-New Orleans Case written by Examiners Ralph L. Wiser and Lawrence J. Kosters.

They also advised CAB to lengthen Delta's Route 24 from Meridian, Miss., to New Orleans. If the Board accepts these suggestions, Delta's Route 24 will become the most direct routing between New York and New Orleans.

Cities to be served on the projected Atlanta-New York leg include Asheville, N. C., Roanoke, Lynchburg, Charlottesville, Va. (with Richmond as an alternate stop), Washington, Baltimore, Wilmington, Philadelphia and New York. Hattiesburg, Miss., was suggested as a stop on the Meridian-New Orleans leg.

Two extensions for Pennsylvania-Central Airlines were included in the new routes recommended in the examiners' report. One would be a route from Birmingham, Ala., to New Orleans via Mobile; the other an extension from Bristol, Va.-Tenn., to Atlanta via Asheville, N. C. Both of these services would be provided by adding mileage to PCA's present Route 55.

The report touched on charges of inadequate service made against Eastern Air Lines during hearing on the case. The examiners believed that a new route case was not the proper forum for airing such charges, but they said that competition along Eastern's Route 5 would probably result in higher standards of service and more vigorous development than might be expected otherwise. The report stated that the weight of evidence indicates Eastern has a tendency to do a better job in competitive situations.

Competition, however, was not the controlling reason for recommending the new service proposals. Cited were the general economic growth of the south and its increasing need for more and improved air service as the primary reasons for putting in new mileage.

Route applications of American Airlines, Atlantic Airlines, Chicago and Southern, Colonial, Eastern, National, and Northeast—all lying generally in the area between New York and New Orleans—failed to get the examiners' approval.

Western Sells DC-4

Western Air Lines has sold one of its DC-4's to Australian National Airways. It is a 44-passenger model purchased new from Douglas Aircraft Co.

PCA Observes 20th Anniversary April 26

Pennsylvania-Central Airlines, which this month changes its corporate name to Capital Airlines, celebrates its 20th anniversary on Apr. 26.

The company, then called Clifford Ball Airline operated its first flight, between Pittsburgh and Cleveland, on Apr. 26, 1927, with a 90-hp Waco piloted by Dewey Noyes. Passenger service started in the spring of 1928 with Fairchild cabin planes.

In 1930 a group, including C. Bedell Monro, now Capital's president, formed Pittsburgh Aviation Industries Corp., which purchased Pennsylvania Airlines, to which the original Clifford Ball interests had been sold. In 1934 air mail contracts were canceled, and when they were reissued another company, Central Airlines, received the contracts over the routes of PAL. A bitter competitive struggle followed, ending with merger of Pennsylvania and Central in 1936.

Today the company operates 3,989 route miles covering 13 states and more than 50 cities. In its 20 years of operations, Capital has had only two accidents in which passengers were fatally injured.

5-6c Ton-Mile Cargo Rate Needed to Attract Perishables

Air cargo cannot expect to attract the major portion of perishables and finished goods traffic until rates have been reduced to five or six cents a ton-mile, according to an article in the forthcoming issue of the Northwestern University Journal of Air Law and Commerce.

John L. Drew and Alan Passen, aviation consultants and co-authors of the report, "Air Cargo: A New Force in Marketing," point out that the average long-haul rail car lot rate for fruits and vegetables is approximately 1.5c per ton-mile, and the express rate for fresh fish averages about 5.7c.

They conclude that the differentials between these rates and the estimated 9c rate for air cargo, expected by 1950, still would preclude air carriage for normal shipment of most commodities.

At the rates expected to prevail over the next several years, the article states, it does not seem likely that air cargo will effect broad, revolutionary changes in the present distribution system. By the time the rates get down to 6c a ton-mile, however, the availability of this form of transportation is likely to play an increasingly important role in decisions relating to plant location, warehousing, production scheduling, product diversification and general sales policies.

UAL to Lease 7 DC-4's

United Air Lines has signed an agreement with Eastern Air Lines to lease seven Douglas DC-4's for the summer period May-September.

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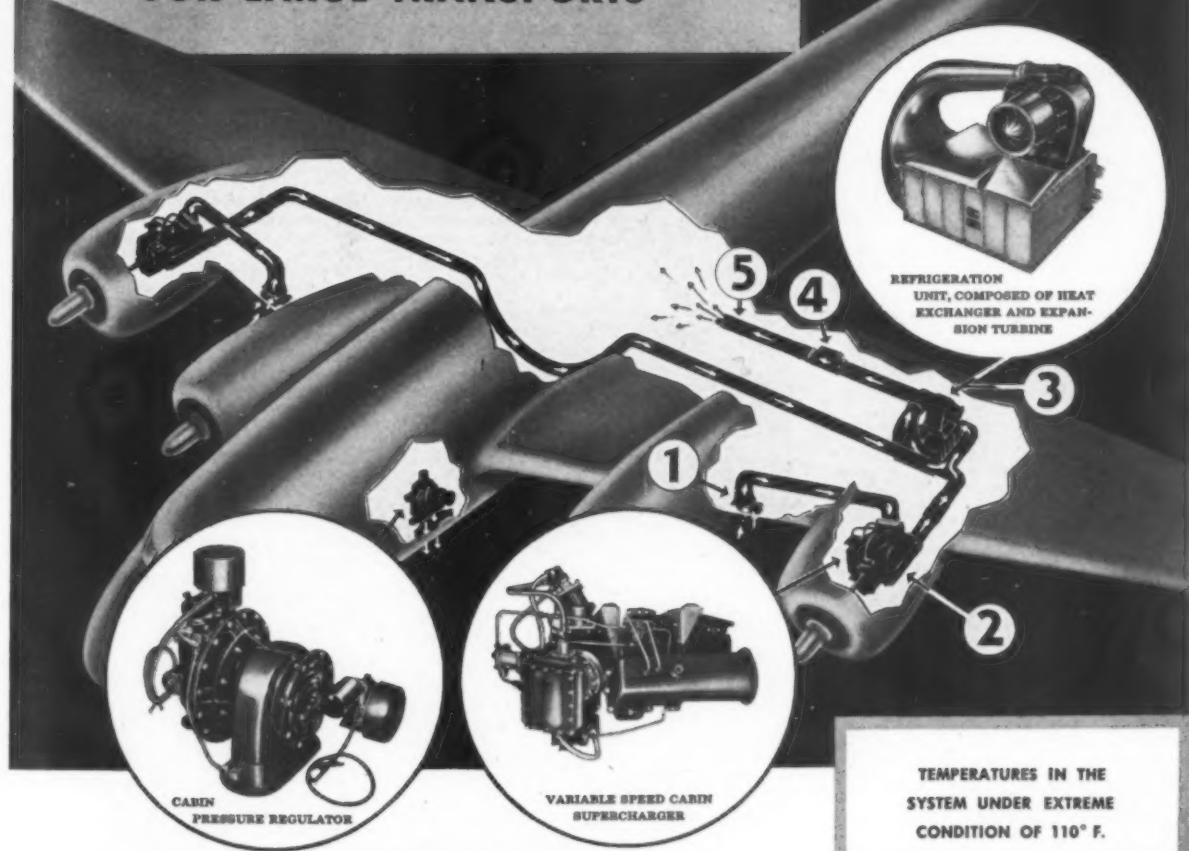
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... Provides Full, Automatic Control of Cabin Pressure, Temperature and Humidity

Several major units — each an outstanding engineering achievement — are combined into a single system which meets all air conditioning needs of modern high-speed, high-altitude passenger transports.

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1. Ambient air enters at 110° F.
2. Leaves supercharger at 270° F.
3. Cooled in refrigeration unit to 40° F.
4. Moisture removed in water separator.
5. Air enters cabin, maintaining cabin temperature at 75° F.

(System pictured above has been simplified for clearness.)

AiResearch "Cabin Comfort" equipment conditions the newest Lockheed Constellation and is being furnished for new planes of Consolidated Vultee, Douglas, Boeing, North American, Republic and Northrop.

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DIVISION OF
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CAB Proceedings

Actions:

Mar. 24—Order authorizing United Air Lines to serve Twin Falls, Idaho, through the Goodling (Idaho) Municipal Airport.

Mar. 25—Examiners report in the Boston-New York-Atlanta-New Orleans Case issued. (Docket 730 et al.)

Mar. 25—Decision approving route consolidations of Braniff Airways and Chicago and Southern Air Lines. (Dockets 1154 and 2177)

Mar. 26—Board order opening investigation of Chicago and Southern's finances, routes and operations. (Docket 2862)

Mar. 26—Show cause order proposing temporary mail pay rates for Chicago and Southern Air Lines' Route 8.

Mar. 27—Board order requiring Trans-Caribbean Air Cargo Lines to cease and desist from violating the Civil Aeronautics Act. (Docket 2593)

April 1—Order setting temporary mail rate for Chicago and Southern Air Lines' New Orleans-Havana operation.

April 2—Order setting temporary mail rate for Colonial Airlines' Routes 71, 71-F, 72, and 72-F. (Docket 2724)

April 3—Show cause orders proposing temporary mail rates for Pan American Airways' Pacific and Alaskan divisions.

April 3—Opinion issuing trans-Atlantic foreign air carrier permit to the Belgian airline Sabena. (Docket 2769)

Calendar:

April 17—Prehearing conference on the Hughes Tool Co.-TWA Control Investigation. (Docket 2796) 10 a. m., e.s.t., Room 1302, Temporary Building "T." Examiner Edward T. Stodola.

April 21—Hearing on applications proposing service between the Pacific Northwest and Hawaii. (Docket 2537 et al.) 10 a. m., e.s.t., Masonic Temple, West Park and Main Street, Portland, Ore. Examiner Warren E. Baker.

April 21—Hearing on applications of Caribbean-Atlantic Airlines, Chicago and Southern Airlines and Pan American Airways for additional service in the Caribbean area. (Docket 2246 et al.) 10 a. m., (local time), Puerto Rico Chamber of Commerce, San Juan, P. R. Chief Examiner Francis W. Brown.

April 28—Hearing on alleged violation of Civil Aeronautics Act by Union Southern Air Lines, a non-certified carrier. (Docket 2637). Examiner Ferdinand D. Moran. Tentative.

May 1—Hearing on non-certified operations of Universal Airlines, Inc. (Docket 2638). Examiner Richard A. Walsh. Tentative.

May 5—Hearing on applications proposing local service in Western Washington (Docket 2368 et al.) Tentative. Examiner James S. Keith.

May 5—Hearing on joint application of Western and United for approval of sale of Route 68 plus aircraft and equipment of UAL. (Docket 2839). Examiner Thomas L. Wrenn.

May 12—Oral argument in the Detroit-Washington Service Case. (Docket 679 et al.) 10 a. m., e.s.t., Room 5042, Commerce Building.

June 16—Hearing on the Minot-Regina, Sask., Application of Mid-Continent Airlines. (Docket 628) Examiner Lawrence J. Kosters. Tentative.

Aug. 12—Hearing on applications proposing additional service to Florida. (Docket 1668 et al.) Postponed from May 10. Examiner F. Merritt Ruhlen. Tentative.

Dorrell Retained by Avianca

Vernon A. Dorrell, former vice president of Mid-Continent Airlines, has been retained by Avianca, South American airline, as consultant on operations, and is now in Bogota, Colombia, on the assignment.

Airline Personnel

Administrative

William G. Preston, formerly in public relations work for American Airlines in New York, has joined the public relations staff of Scandinavian Airlines System in New York City. George P. Wyly, for the past four years chief auditor of Republic Aviation Corp., has been appointed treasurer of SAS.

Traffic and Sales

Harvey Hancock, who recently resigned as assistant to the president of United Air Lines, has been placed in charge of advertising, sales, and traffic for Pan American's Pacific-Alaska Division.

Grahame T. Smallwood has been named senior international traffic representative in Washington for TWA, succeeding Richard W. Roney, who resigned to become associated with Thos. A. Cook & Son in Philadelphia. Other TWA appointments in Washington include Russell Ellis as senior traffic representative, and Hal Leatherwood and Francis Hasenauer to the traffic staff.



Levering

Ford

George B. Levering, 12-year veteran of TWA, has been named transportation manager for the midwest region, succeeding Joseph W. Letzku, who recently was appointed to an International Division post in Cairo, Egypt. Levering will be responsible for all sales and service activities for the region.

James B. Ford, who joined Capital Airlines in 1942 after service with the AAF, has been appointed district sales manager in the Akron-Youngstown area.

Lawrence Crenshaw has been promoted to Atlanta district cargo representative for Delta Air Lines.

Mason Mallory, former d.t.m. for Western Air Lines in Rapid City, S. D., has been named d.t.m. in the Minneapolis-St. Paul area. Other new assignments include that of John "Scotty" Burns to acting d.t.m. for San Diego, succeeding Ben Spaulding, resigned, and Howard Alexander to Denver reservations.

Jean Wilbanks, for the last two years sales representative for Pan American at Los Angeles, is in charge of company's newly opened Hollywood ticket office.

J. Richard Scott, TWA traffic representative at Kansas City for the last four years, has joined Southwest Airways as manager of its tariffs and rates division.

Perry H. Taft has resigned as director of public relations for Southwest Airways to return to law practice. He will be associated with Gardner Johnson, former California legislator, in San Francisco, specializing in airport legal problems.

Frank W. Bodwell, former American Airlines district sales manager at Indianapolis and Cleveland, has been designated mid-western director of state affairs for the airline.

John O. Briggs, who joined American Airlines in 1930, has returned as sales manager in Hartford, Conn., after five years in military service and three months with American Overseas Airlines in Scotland. Briggs served as sales manager at Hartford from 1930 until 1941.

Edward Melker, who joined United Airlines in 1941, has been named chief reservations agent at Omaha.

Harry B. Daigaard, who has been American Overseas Airlines' traffic officer at Stockholm for the last several months, has been promoted to Stockholm d.t.m., replacing Robert L. Ware, who has returned to the U. S.

Michael J. O'Malley, Jr., former supervisor of reservations and ticket offices for American Airlines, at Cincinnati, has been appointed reservations manager at Chicago.

Charles Harris, who joined American Airlines as a reservations clerk in 1939 and subsequently managed the Palmer House ticket office in Chicago, has been named special sales representative for international travel for Chicago and vicinity.

James H. de Revere, formerly manager of international sales and ticket office in New York for TWA's Transcontinental Division, has been appointed assistant passenger traffic manager of the company's International Division. He replaces Henry Rieger who left the division to become eastern region sales manager.



Ryan

Barnes

Edward J. Ryan, former city traffic manager for Mid-Continent at Minneapolis, has been appointed district traffic manager at Minneapolis. Jack B. Barnes, former city traffic manager at Des Moines, has been made district traffic manager. New city traffic manager at Tulsa is Eugene C. Welch, former traffic representative there. Kenneth W. Woods, former traffic representative at Des Moines, has been moved up to city traffic manager at Shreveport, being replaced by George M. Gardner, who has been working for MCA in the Kansas City ticket office. Howard E. Davidson, former traffic manager at Shreveport, has been named city traffic manager at Kansas City.

Victor L. Brown, in charge of reservations for United Air Lines in Washington since 1943, has been shifted to chief of reservations in Chicago.



Goodspeed

Sheehan

Richard W. "Dick" Goodspeed, interline traffic manager with United Air Lines, is on loan with Philippine Air Lines as general traffic manager, in charge of developing PAL's traffic department in accordance with company's projected route expansion to Far East, Australia, and the United States.

Thomas A. Sheehan, formerly assistant to the New York district manager of Eastern Air Lines, has been appointed city manager

NON-SCHEDULED

CAA Non-Sked Policy Attacked by UPMA

When the Civil Aeronautics Administration rejects or pigeonholes a meritorious suggestion from its Non-Scheduled Flying Advisory Committee, the public and the industry learns about it only by chance, if at all, the United Pilots & Mechanics Association charged in an editorial in its latest newsletter.

Taking strong exception to the CAA's policy of holding the Committee's meeting behind closed doors and then having its information section hand out to the press only such information as it chooses to disclose, the UP & MA recommended that: (1) The agenda of the committee's meetings henceforth be published at least two weeks in advance of meetings so the public will have opportunity to communicate its views to committee members in advance. (2) All recommendations made by the committee be fully disclosed to the press in order that the public may know to what extent the CAA is following its recommendations.

"The public wants to help," the editorial concluded, "but it can do little if it is not kept fully informed."

An example of what the UP & MA meant was seen in the report circulated recently to the effect that CAA had turned down a recommendation of the Non-Scheduled Flying Advisory Committee that all CAA inspectors and policy-making officials be required to spend at least one week a year in traveling cross-country in a light plane, so as to acquaint themselves with the problems and the thinking of the "grass roots" of aviation.

Pacific Air Lines has devised a "commuter book" plan for air travel between San Francisco and Los Angeles, consisting of eight travel coupons good for eight one-way or four round-trips between San Francisco and Los Angeles, Sacramento and Los Angeles, or Los Angeles-San Francisco-Sacramento. The book is good for six months and affords a saving of 17% from the standard fare, a saving of \$24.38. L. C. Ives was recently named president of the company, succeeding George W. Tompkins.

Inland Airways, Inc. has been organized to provide air service between Walla Walla, Kennewick and Seattle, Wash. Capital of the company, incorporated by Perry B. Cole, president, Paul R. Roesch and Gwyn A. Jones, all of Walla Walla, is \$125,000.

Pacific Overseas Airlines on March 17 completed its 56th trans-Pacific flight for UNRRA and at the same time completed its first year of operations, during which it flew 110,000,000 passenger miles and 25,500,000 ton miles with a 100% safety record. POA has opened a traffic office at 632 W. Sixth St., Los Angeles, and expects to begin service L. A.-Honolulu-Philippines-Siam soon.

Fleetwing Air Cargo Co., non-scheduled air freight carrier, has been formed by Francis A. Watrons, of Meriden, Conn., with headquarters at Lufbery Field, Wall-

ingford, Conn. Present equipment includes a Noorduyn Norseman.

Waterman Airlines has discontinued its combined passenger-cargo intrastate operations in Alabama on permission granted by the Alabama Public Service Commission. The company had filed formal petition to suspend service temporarily on grounds that it was operating at an annual loss of \$500,000. In permitting suspension, the commission held that "if any qualified person, firm or corporation" applied to operate the suspended routes and permission was granted, Waterman's "certificate will be canceled."

The Flying Tiger Line has contracted to fly approximately 30,000 pounds of merchandise monthly out of Los Angeles for Macy's in New York. Cargo will consist of California style fashions and accessories.

Lone Star Air Cargo Lines reports that baby chicks for a large Georgia hatchery constitute one of the biggest items in its present air freight business. Carrying as many as 40,000 chicks in a single load, Lone Star is making several flights a week for L. A. Chemell, owner of the Gainesville Hatcheries. The carrier has insulated the cabins of its C-47's for carrying chicks and has worked out a system for temperature control and air circulation both in flight and on the ground.

Like most non-scheduled operators, Lone Star has "retrenched" pending a CAB decision on their case. Rather than invest money in a large sales organization necessary to assure full loads, the company is relying heavily on freight forwarders and sending out planes only when good loads are available. As a result, while load factors have been running reasonable high, present aircraft utilization is somewhat less than four hours a day. It is doing its own maintenance at its Dallas base. No provision for engine overhaul is immediately necessary, since the company has a supply of 35 almost-new surplus Pratt & Whitney R1830 engines.

Gulf Airways, Inc., is the new name for Southern Commercial Air Transport, Inc., of New Orleans, the change being made to lessen confusion with other avia-

Trans-Caribbean Ordered To End 'Scheduled' Services

Trans-Caribbean Air Cargo Lines has been ordered by the Civil Aeronautics Board to cease and desist from violating the Civil Aeronautics Act by engaging in scheduled air transportation outside existing regulations. The cease and desist order was issued with the consent of Trans-Caribbean, which admitted that some of its past activities had probably been somewhat over the line.

The Board order said that Trans-Caribbean had been flying scheduled air transportation without having the necessary certificate of convenience and necessity. CAB prohibited the line from advertising or representing to the public in any way that service is available to the general public customarily, frequently or regularly between specific points.

It specifically prohibited Trans-Caribbean from flying between New York and San Juan, P. R., New York and Miami, or between New York and Los Angeles in such a way that any given number of trips are flown between the same two points per week or in succeeding weeks.

tion companies. The original company established Jan. 1, 1946, reports the following results for seven months of non-scheduled operations: 81,378 miles flown; 34,260 cargo ton miles; 667,000 revenue passenger miles; \$59,187 total revenue. Total loss for the period, which included interim expense of company's feederline application, was \$1,100. Gulf is incorporated with 50,000 shares of no-par common stock authorized, all of which is paid in. The company operates two DC-3's and one Noorduyn Norseman.

Transocean Air Lines has inaugurated a pilot training course at Oakland Municipal Airport. Time requirements and costs for the different courses are: airline transport rating—15 hours, \$325; multi-engine—5 hours, \$125; horsepower rating—5 hours, \$125; instrument—15 hours, \$325.



Sante Fe Freight—First of Santa Fe's DC-4 air freighters to land at Chicago airport brought a heavy load of cargo from Los Angeles. The air fleet of Santa Fe Railway, first railroad to go into the air freight business, includes seven planes converted for cargo by Douglas Aircraft Co. Capt. Steve Doss, chief pilot, and First Officer Thomas R. Aaron are shown leaving the plane.

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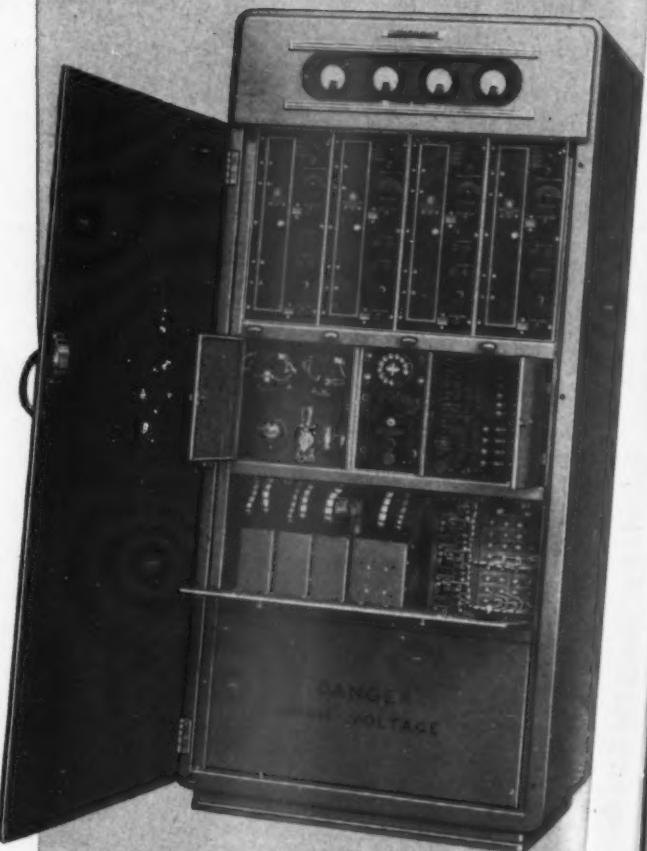
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Trade Groups Again Veto CAA Operation Of Maintenance Base

Grass roots opposition to the Civil Aeronautics Administration plan for continued operation of its own maintenance base at Oklahoma City, Okla., is developing under the leadership of the various trade and pilot associations which comprise the Civil Aviation Legislative Council.

The Council is opposed to this CAA enterprise on the basis that it represents an invasion by government of the field of private business. Washington representatives of CALC met in Washington recently to discuss a program which is designed to enlist the efforts of individual members of the 10 trade associations by notifying their representatives in Congress as to their position on the matter.

CAA operated the base last year after compromise legislation was passed which placed a \$200 limit on the size of a repair job which could be done by CAA without asking for competitive bids. CAA asks that the \$200 limit be removed and is seeking \$2,050,000 for the maintenance and operation of aircraft item for the fiscal year beginning July 1. The \$500,000 increase over last year stems largely from CAA's plans for operating its 231 aircraft 270 hours a year instead of 135 hours.

Among the groups opposing the appropriation sought by CAA are the National Aeronautics Association, National Aviation Trades Association, Aeronautical Training Society, United Pilots and Mechanics Association and the U. S. Chamber of Commerce.

* * * *

Ritchie Flying Service, Fort Worth, Tex., has completed its DC-4 pilot training contract with the Norwegian airline, South American and Far East Air Transport. Twenty pilots, all Norwegians with previous military flying experience, were trained. Ritchie reports that GI flight training, which constitutes the bulk of its work, is holding up unabated. Most trainees appear satisfied with a private license; only about 50% of those who start out for a commercial rating complete the course.

Precision Airmotive, Inc., Houston, Tex., wiped out a few weeks ago by a costly fire, is reported well along in resuming its engine overhaul work. The company was able to acquire a surplus prefabricated hangar to serve as a temporary main shop. The fire destroyed all buildings except a brick engine test stand, and ruined a large stock of special shop equipment, tools, and engines and parts in overhaul and storage. The heavy damage was attributed in part to the fact that no adequate fire hydrant connections existed at the airport, and water was brought by hose from a city main four miles distant.

Airquipment Co., Burbank, Calif. has opened a new regional sales office at 53 W. Jackson Blvd., Chicago, with K. H.

Holmgren as regional manager.

Pacific Airmotive's Fresno branch has a new manager in Cecil O. Bryant, who started with PAC in 1940 and was formerly plant superintendent at Anchorage, Alaska.

Southwest Airmotive Co., Dallas, Tex., has distributed a listing of fixed fees for overhauls and exchanges on Beechcraft D18S aircraft. Company plans eventually to establish fixed customer-costs for practically all repair and overhaul services.

Tappan Airways, Inc., is planning an extensive seaplane base covering approximately 150,000 sq. ft. at Tarrytown, N. Y. Plans call for nine all-steel hangars, two other buildings for flight control offices, school and lecture rooms. Space to hangar 40 planes, with service and maintenance facilities included as well as marine installations with automatic ramp and floats to accommodate 14 planes simultaneously. The group behind the project is headed by George Helwig, former TWA pilot. The company plans to operate 12 planes for rentals, instruction, and charter service.

Hawthorne Flying Service, of Orangeburg, S. C., has disclosed plans for extensive improvements at three of its six bases. At Jacksonville, Fla., a building program to include a maintenance hangar, individual hangars and an administration building will be completed this year; at Columbia, S. C., construction of additional individual hangar facilities will be completed; and at Charleston, S. C., Hawthorne will resume a complete fixed-base operation.

Embry-Riddle Co., of Miami, Fla., recently completed a program giving advanced flight training to French naval officers under a contract with the French Navy. Operating one of the largest programs of G.I. flight training in the country, Embry-Riddle uses 40 airplanes in giving instruction to some 600 students at its nine Florida bases.

Spartan School of Aeronautics, at Tulsa, Okla., reports largest enrollment in history—over 2,000 students—attending its various colleges and schools, according to Capt. Maxwell W. Balfour, school director. Already offering CAA-approved private pilot, commercial, instructor, multi-engine and airline transport rating courses, Spartan plans to add electrical instrument and flight engineer courses to its curriculum this year. It also plans to open a branch base for flight training at Miami.

Pittsburgh Institute of Aeronautics reports it has acquired war surplus planes and training equipment originally costing more than \$2,000,000 for the training of A. & E. mechanics, of whom it graduated a record class of 57 in February. The school currently uses about 16 types of aircraft engines. It has an enrollment of 650, 90% veterans. It recently graduated nine girls from the aviation secretarial-airline reservation course.

University of Southern California College of Aeronautics, on Hancock Field, Santa Maria, has added an airline transport pilot rating course and additional engineering courses to its curriculum, rounding out its G.I. program. The college has acquired three Douglas C-47's, four Lockheed Lodestars, and four Cessna twin-engine transports for multi-engine ratings. In addition, it has more than 60 single-engine trainers and six advanced Link trainers.

Industry Opinion Split On Pending Mechanic Certificate Changes

Comments reaching the Civil Aeronautics Board regarding proposed revisions of Parts 24 and 53 of the Civil Air Regulations dealing with mechanic certificates and mechanic school certificates, respectively, show a division of opinion within the industry as to some of the proposed changes.

One of the more controversial changes is that which would create a rating of aircraft inspector and permit the holder of such a rating to return an airplane to service after major repair or overhaul without submitting it to a CAA inspector for approval.

The consensus is that this is a sound provision, but there are some who feel that the requirement of at least five years' experience is too stiff.

The revised Part 24 would set up ratings for (1) airframe, (2) power plants, (3) aircraft inspector, (4) propeller, (5) instrument and (6) radio mechanics, with at least a year of practical experience required to qualify for the required examinations. If experience on airframes and power plants has been obtained concurrently, a total of 24 months' experience is required. There are protests that this compulsory two-year apprenticeship, instead of one year now required for an A & E license, will work an undue hardship on applicants.

Mechanic schools generally are not protesting the proposed increases in the minimum number of hours of instruction required for the various ratings, the new minimum being: 1,360 hours instruction on airframes, 1,120 hours on power plants, 920 hours on propellers, 1,000 hours on instruments and 1,000 hours on radio. Some schools fear, however, that this will so increase the cost of training that enrollments will fall off as a result.

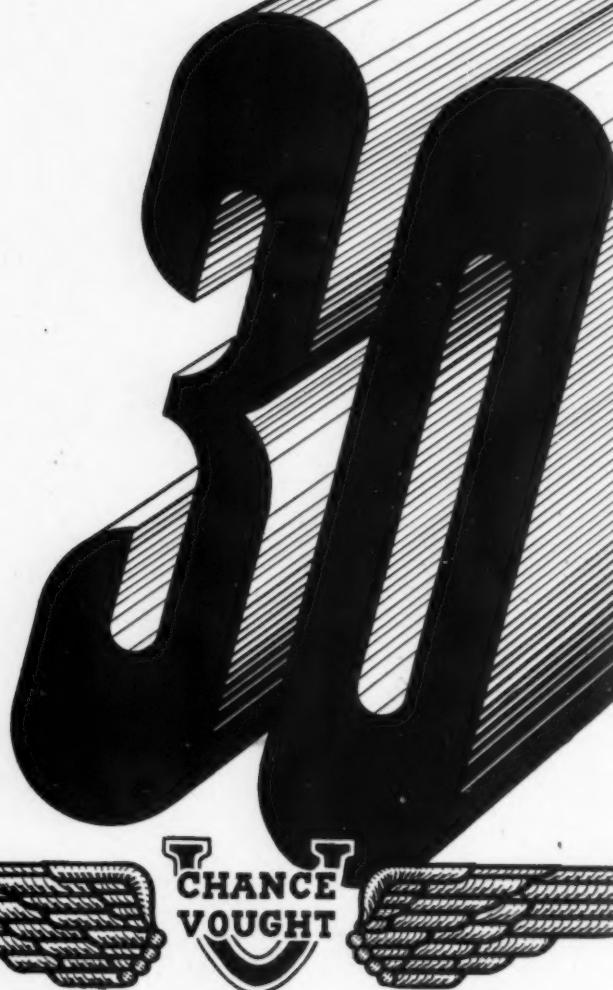
Experiment in Helicopter Uses Underway at Dallas

A new experiment in commercial helicopter operation is being conducted by Earl Rowland of Dallas, Tex. An old-timer in conventional aircraft operation, Rowland recently bought two surplus Sikorsky R-4's and enough spare parts to keep them running for awhile.

Rowland is having a try, on charter arrangements, at every type of activity for which a helicopter can be expected to prove particularly useful—excepting passenger transportation. He keeps particularly busy at carrying advertising displays over metropolitan areas, pipe line inspection and other oil field jobs, and crop work.

The experimental nature of Rowland's commercial helicopter activity also extends to analysis of what it costs to operate a helicopter. Thus far he finds that a charter rate of around \$100 per hour is necessary.

Thirtieth Anniversary



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Release of 36 Surplus Airports in Midwest Announced by WAA

The transfer to civil peacetime operations of 36 war surplus airports which cost the government over \$100,000,000 is scheduled for completion by the end of this month, the Chicago regional office of the War Assets Administration has announced. All the airports are located in the area from Pittsburgh to South Dakota and from Kentucky to the Canadian border.

"With completion of this program, the Great Lakes and Midwest area will have gained an operating network of improved aviation facilities which will be of immediate benefit to all types of flying," said the WAA announcement.

Among the airports in the area which already have been converted to peacetime operations are the Orchard Place airport taken over by the City of Chicago for a new municipal field and the Willow Run airport which has been transferred to the University of Michigan. The airports and airport facilities covered in the announced conversion program are:

Chicago Region: Converse Airport, Converse, Ind.; Douglas Airport (Orchard Place), Chicago; Galveston Airport, Galveston, Ind.; St. Charles (Ill.) Airport; Chicago Municipal Airport (government-owned improvements); De Kalb (Ill.) Airport; Camp Grant (land for projected municipal airport), Rockford, Ill.; Billy Mitchell Field (government-owned facilities), Milwaukee, and Truax Field (government-owned improvements), Madison, Wis.

Detroit Region: Alpena Army Air Field, Alpena, Mich.; Custer Airfield, Monroe, Mich.; Kellogg Army Air Field, Battle Creek, Mich.; Romulus Army Air Field (government-owned improvements), Wayne County, Mich.; Tri-City Airport, Freeland, Mich.; Muskegon Municipal Airport (government-owned facilities), and Willow Run Airport, Ypsilanti, Mich.

Minneapolis Region: Minneapolis Municipal Airport (government-owned facilities); St. Paul Municipal Airport (government-owned improvements); Bismarck (N. D.) Army Air Field (government-owned facilities); Fargo (N. D.) Army Air Field (government-owned improvements); Mitchell (S. D.) Army Air Field; Pierre (S. D.) Army Air Field; Sault St. Marie (Mich.) Airport (government-owned facilities); Sioux Falls (S. D.) Army Air Field (government-owned improvements), and Watertown (S. D.) Army Air Field (government-owned improvements).

Louisville Region: Sturgis Army Air Field, Union County, Ky.; Bowman Army Air Field (government-owned facilities), Louisville, Ky.; Standiford Airfield (government-owned improvements), Louisville, and Freeman Army Air Field, Seymour, Ind.

Cincinnati Region: Walesboro (Ind.) Army Air Field; St. Anne Airfield, Jennings County, Ind.; and government-owned improvements and facilities at Day-

ton Army Air Field, Vandalia, Ohio; Lunken Airport, Cincinnati, and Stout Field, Indianapolis.

Cleveland Region: Government-owned betterments at Connellsville (Pa.) Municipal Airport and Akron (O.) Municipal Airport.

Other Army, Navy and government airports in the area have not yet been declared surplus by the owning agencies and WAA will have no jurisdiction over them until they are officially released.

Airport Notes

Hartford, Conn.: Bradley Field, a war developed airport located near Hartford, Conn., is capable of developing, under energetic management, a \$2,000,000 profit by 1960, according to conclusions reached in a study made for the Connecticut Aeronautics Commission by Joseph McGoldrick, aviation consultant. Now in process of being released by War Dept. to the state, the field is described as having four times the area of LaGuardia and three times that of Washington National. Two major carriers—United and Eastern—already have leased space in the temporary terminal building, and Peruvian International Airways, operating from Montreal to Havana, will use Bradley as its main base of operations in this country and employ approximately 300 persons at the field.

Philadelphia: CAA on April 1 took over control tower operations at Philadelphia's Southwest Airport, with 10 tower operators previously paid by the city entering CAA employment. The city will save approximately \$35,000 a year as result of the change.

Fairbanks, Alaska: Pan American Airways will not be able to use facilities of Army's Ladd Field, Fairbanks, Alaska, after June 1, under the Army's program closing its military fields to commercial lines except in emergencies. AAF officials said Ladd Field is having maximum military utilization and there is not room for commercial operations. Only other facility available at Fairbanks is Weeks Field, which is not equipped to handle Pan Am's traffic. Pan Am is reported seeking continued use of Ladd until other arrangements can be made.

Seattle: William E. Duwe, former Boeing Aircraft test pilot and more recently a pilot for West Coast Airlines, has been named to succeed Ernest Cluck as manager of Boeing Field, Seattle. Cluck has entered private law practice.

Houston: The new city administration which inherited two conflicting airport programs is expected to define its airport expansion plans soon. One program calls for improvement of present municipal airport into an adequate terminal for domestic service and for an international gateway. Second plan, outlined last fall for a special mayor's committee headed by Oilman W. F. McCarthy, called for construction of a new airline field on a 4,000-acre site at Bellaire, southwest of the city. McCarthy's committee obtained option on this site and has offered it to the city at cost. Meanwhile a \$50,000 temporary annex to the terminal has been completed for use by

Washington National Now 'Safest' Airport

Washington National Airport on April 3 became the first commercial airport in the country to have in operation the Instrument Landing System, the GCA (Ground-Controlled Approach) radar landing system, and the MEW (microwave early warning) radar surveillance set. Thus, from a technical standpoint, it was termed the nation's "safest" airport.

The ILS system has been available there about a year, and the GCA and MEW were new acquisitions loaned by the Army to the Civil Aeronautics Administration for service testing. Another Army-loaned GCA set was put into operation at Chicago on the same date, and a third is being installed at LaGuardia Field, where a MEW set also is about ready to go into operation.

Use of MEW will be coordinated with the regular air traffic control flight progress boards used by the Airway Traffic Control Centers of the CAA in the control of en route traffic, while the GCA will be used to monitor the ILS and to serve as a supplementary landing aid in emergency situations.

customs, immigration, and international carriers.

Fort Worth: The airport program at Fort Worth, Tex., provides for building a new commercial terminal on a site already acquired southwest of the city. This will leave Meecham Field, which can not be expanded to meet CAA requirements for DC-4 operations, available for local operations and private flying. Only improvements now planned for Meecham are extension of the main north-south runway from 4,200 to 5,200 feet, and erection of two 140 x 200-ft. hangars which city has purchased.

Puerto Rico: All civil operations at the \$90,000,000 San Juan Naval Air Station will be transferred to the Puerto Rico Transportation Authority about May 5, according to an agreement signed by Gov. J. T. Finero, Undersecretary of the Navy John L. Sullivan, and Jose G. Bloise, general manager of the Transportation Authority. The airport will become a major international civil air terminal and port of entry through which South American, African, and European passengers will clear. Present temporary airline operating permits will be cancelled by the Navy and future applications will have to be made to the Authority.

Pan American Airways has been granted a lease agreement for continued use of certain facilities which it constructed on the Civil area of the field. The Authority will lease from PAA the present terminal building, hangar and other facilities at monthly rental of \$1,666, and in turn lease back to PAA at monthly rental of \$583 that part of the facilities which PAA needs for its own operations. Approximately 30 scheduled and non-scheduled carriers are now operating into Puerto Rico, and passenger traffic is estimated to exceed 25,000 persons per month.

New York: Landing fees for private flyers have been removed from Westchester County Airport, White Plains, N. Y., by General Manager Robert W. Gallaway.

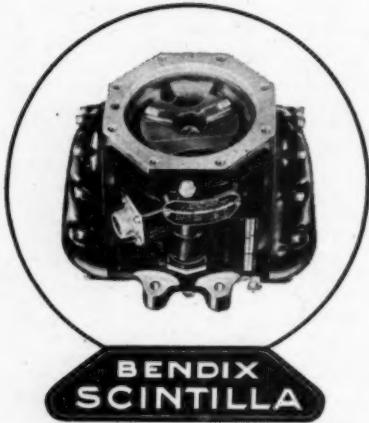


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ICAO Meeting to Consider Multilateral Air Agreement

Adoption of Pact for Equal Commercial Rights Doubtful

By ERIC BRAMLEY

A multilateral air transport agreement, under which all international airlines would have the same commercial rights, will be up for discussion at the International Civil Aviation Organization assembly meeting in Montreal next month, but adoption of such an agreement is not in the cards.

This is the opinion of U. S. officials who have studied the draft of the agreement prepared by a subcommittee of ICAO's air transport committee and adopted by the committee by a 7 to 4 vote.

Supporting the proposed agreement were Canada, Brazil, Czechoslovakia, France, Iraq, Netherlands and Norway. Leading the opposition was the U. S. together with the United Kingdom, China and Ireland.

The agreement provides that there would be a full multilateral exchange of the rights to fly all five freedoms. There would be no more bilateral negotiations over routes. Each nation would merely name certain international airports that could be used by international airlines.

Capacity Provision

There would also be a "capacity" provision, saying that an airline of a state can provide capacity required to carry, at reasonable load factors, "(1) passengers, mail and cargo taken on or to be put down in the territory of such state, and (2) passengers, mail and cargo moving by such airline between points in the territories of other states which the route touches, insofar as capacity for such traffic is not being provided by airlines of the states in which such traffic is taken on or put down."

If there are disagreements which cannot be settled by negotiation, they are to be resolved by an arbitral tribunal whose members are named by the president of ICAO's council. The president would also have the power to issue temporary restraining orders.

A state can withhold the agreement's rights if substantial ownership and effective control of the airline concerned are not vested in nationals, or in the government, of the contracting state or states in which the airline is established.

When the U. S. delegation goes to Montreal, it can be expected to express its belief in a multilateral agreement—eventually. U. S. officials believe—and in this they are supported

by officials of other governments—that the time is at least five years away before the nations of the world will be ready for a multilateral agreement.

Exactly what position the U. S. will take at Montreal has not been fully revealed. But it can be said with authority that the U. S. will flatly oppose any multilateral exchange of routes. It believes in bilateral negotiations on routes, and is supported by the other three countries which voted against the proposed agreement. The arbitral tribunal, which might have the effect of making ICAO an international Civil Aeronautics Board, will also be opposed. The indefinite and vague "capacity" provisions will need clarification.

The U. S. position is being "firmed" through the Air Coordinating Committee, and indications are that the delegation will be better prepared than it was last year. Industry has been consulted, and this has drawn warm praise from airline officials.

Agreement Lacking

It is no secret that during the past few months there has not been agreement between government and industry on the U. S. course. Neither, for that matter, has there always been agreement between various government departments. This is now straightening out, however. The airlines were dubious about the U. S. supporting a multilateral approach at this time, but they are now inclined to go along. However, they still have some doubts as to whether the delegation will be tough enough in its trading. They fear concessions in the wrong places.

However, membership of the delegation seems to be such that it will hold its own in negotiations. Heading the group will be Garrison Norton, newly-named Assistant Secretary of State, handling aviation, telecommunications and shipping. It remains to be seen how Norton will perform as head of a delegation. However, he is hard-working, knows the problems and has been insistent upon getting aviation a higher place in the State Dept. He has been praised for his work as the department's director of transport and communications.

Assistant Secretary of Commerce for Air William A. M. Burden is given credit for making the most of an uncertain U. S. position last year, and CAB Chairman James M. Landis, on past performance, can be a tough trader. Norton, Burden and Landis are the three top figures on the delegation. Others will include CAB Member Harlee Branch; former CAB

Chairman L. Welch Pogue (if he accepts); Laurence Kuter, U. S. representative on ICAO's council, and Paul Smith, assistant representative.

Officials express two thoughts regarding a multilateral agreement. One is that there is need for a lot more "frank and open" discussion of the problems, such as took place last year. The other is that the nations must wait and see how international air transport develops in the next few years before deciding on an agreement.

One observer, predicting that there was little chance of agreement this year, summed it up when, speaking of the proposed agreement, he said: "It's not too bad—it's a good multilateral approach, but nobody's ready for it."

Relief from Local Gas Taxes Urged by IATA Financial Committee

The semi-annual meeting of the Financial Committee of the International Air Transport Association held in Montreal decided to push adoption of international agreements which would relieve airlines from local taxes on gasoline used on international flights. IATA officials will approach the International Civil Aviation Organization (ICAO) with a view to obtaining a world-wide pact to that effect. Such an agreement was signed in London in 1939 but was never ratified because of the outbreak of war.

Other committee decisions were:

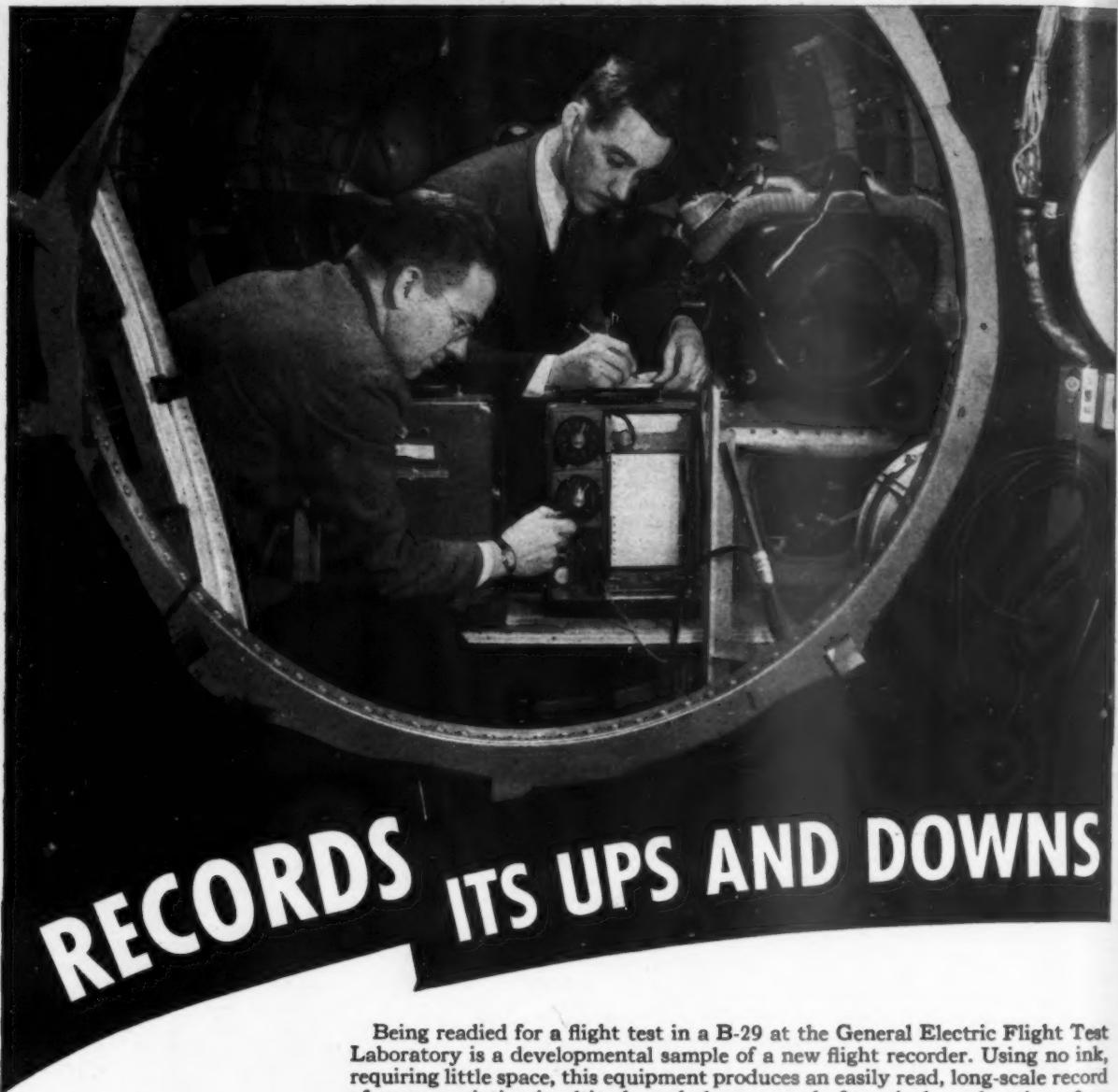
1. Blanket bonding of all airline ticket agents certificated by IATA. This would eliminate the present need for each airline to bond agents, resulting in an industry-wide gain in economy and efficiency.

2. Approval in principle of first drafts of a world-wide credit travel plan whereby travellers on international airlines can buy tickets against billings, as well as for cash. Member companies are being asked for comment.

3. Adoption of a new formula for assessment of IATA membership dues, subject to the approval of the next annually membership meeting. Formula comprises a fixed charge plus a sum based on ton-miles flown in international operations. The last general meeting at Cairo held that the present system of dues based on gross licensed tonnages of fleets is unfair, as the weights of many converted military aircraft are no true indication of their commercial payload and earning capacity.

Sabena Gets Foreign Permit

A trans-Atlantic foreign air carrier permit authorizing operations between Brussels, Belgium, and New York, has been issued to La Societe Anonyme Belge d'Exploitation de la Navigation Aerienne (Sabena) by the Civil Aeronautics Board. Intermediate points listed are Shannon, Eire, and Gander, Newfoundland.



RECORDS ITS UPS AND DOWNS

Being readied for a flight test in a B-29 at the General Electric Flight Test Laboratory is a developmental sample of a new flight recorder. Using no ink, requiring little space, this equipment produces an easily read, long-scale record of every variation in altitude and also a record of vertical acceleration of an airplane. Recorders will soon be available to all airlines for commercial flights, and to aircraft companies for experimental work.

The recorder is normally installed in the tail of the airplane and is connected electrically with standard aircraft instruments located on the flight deck or elsewhere in the airplane. Records are easily removed for analysis by an Airline's Operations Department in checking how closely a flight plan is followed. A variation of 20 feet in altitude can be clearly read. It is, therefore, useful in accident analysis. To record additional information, a four-element recorder is being developed, and will be even more useful in maintaining safety records under the increased traffic densities of the future.

Again, General Electric is meeting the needs of the airlines, and will continue to do so. Our engineers will be glad to discuss your requirements at any time. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*



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April 1

TWA and British Interests Form Joint Greek Airline

By FRANK M. HOLZ

Transcontinental & Western Air and British European Airways have jointly undertaken to form a new airline in Greece to be known as Aero Hellas. The American and the British companies signed a preliminary agreement in London March 19.

Details of participation by Greek nationals are not yet settled and representatives of the two international airlines have been negotiating in Athens with Greek interests.

A report from Europe states that proposals for joint U. S.-Anglo-Greek participation in Greek domestic air transport were first discussed as far back as the summer of 1945. It is claimed that the current three-way project is therefore not primarily the result of the U. S. foreign policy relating to aid for Greece and Turkey recently announced by President Truman. It is obvious, however, that operations of Aero Hellas may have a considerable bearing on the effectiveness of U. S. activities in Greece and adjacent territories and so TWA's participation will be watched closely by U. S. officials concerned with foreign policy as well as those responsible for U. S. aviation overseas.

Greek Line Liquidated

It is understood that creation of Aero Hellas involves liquidation of the present Greek airline in which TWA has a financial and managerial interest—Technical Aeronautical Exploitations Ltd. (TAE), usually referred to as Greek Airlines. Assets of TAE will presumably be taken over by the new company.

The British company BEA had for some time been negotiating with the Greek Government regarding creation of an Anglo-Greek airline along the general lines of TAE to provide competition for the TWA affiliate. In view of the agreement for joint participation in Aero Hellas, BEA has scrapped all plans for a separate company in Greece.

The present TWA-BEA deal runs directly counter to precedent in a similar situation in Italy wherein TWA's management early in 1946 refused to permit British participation in Linee Aeree Italiane (LAI), an Italian company with 40% TWA interest. In pursuance of U. S. policy advocating free competition, the Dept. of State withheld approval of TWA's part in LAI until a clause granting exclusive rights was removed from the LAI charter by the Italian authorities. The British then organized an Anglo-Italian airline, Aerolinee Italiane Internazionali (AII). However, because of subsequent developments, competition has not been as keen as seemed at first would be the case. LAI concentrates on domestic services while

AII is set up primarily for international operations in the Mediterranean region.

Aero Hellas is to be supplied with both British and American technical assistance. It is reported that selection of aircraft to be used will be "on merit." Observers see a possibility of some early disputes on the matter of providing a fleet. Unless this has already been settled in advance, it is fairly certain that BEA will plump for at least some British equipment. As a government corporation, it is subject to official pressure to extend the use of British designs, a point on which both the government and the harassed British manufacturers may be quite insistent, even if BEA were not to act on its own volition. BEA is the world's leading operator of Vickers Viking transports. On the other hand, TWA is expected to urge continuation of the use of U. S. aircraft, most probably Douglas DC-3 types in use by most airlines in Europe, as well as in the rest of the world.

Feeder Connections

Aero Hellas will provide feederline connections with the trunk routes of both BEA and TWA. Initial operations will be internal only but may later be extended to nearby countries, such as Turkey, Italy and Egypt. The present TWA-affiliated airline TAE has been operating only on the Greek mainland and to the island of Crete.

While TWA is reshuffling, and possibly extending, its commitments in Greece, it is seeking to pull out of the Philippines by selling the 28% holding in Philippine Air Lines acquired late in 1945. The PAL shares were bought at a time when TWA believed it might be awarded a round-the-world route, including stops in the Philippine Commonwealth. However, the Pacific case decision of the CAB awarded the northern route to the Far East to Northwest Airlines. TWA's overseas route, via the Atlantic, now terminates in China, where connections with Northwest schedules will be made.

No official report has been received as to whether Northwest intends to take up TWA's holdings in the Philippine company, which has become one of the most active operators in the Far East. (PAL has completed over 100 trans-Pacific commercial flights). W. A. Patterson, president of United Air Lines, announced recently that PAL President Andres Soriano had asked him to take over the TWA interest but that United had no intention of doing so.

Although TWA, in common with most other airlines, has been cutting staffs and trimming expenses, it will still be associated through stock holdings and/or management contracts with civil air services in Greece, Italy, Ethiopia, Saudi Arabi, Iran and—if not successful in disposing of its PAL shares—also in the Philippines.

British May Purchase Engine-Less Connies

Several reports from London indicate that the British Government is considering purchase of additional Lockheed Constellations for British Overseas Airways Corp. These would, however, be powered by British-made Bristol Centaurus two-row radial reciprocating engines rated at 2600 hp each, about 300 hp more than the Wright engines in the standard Constellation.

Lord Nathan, Minister of Civil Aviation, made an official statement in the House of Lords admitting "exploratory exchanges" between Lockheed and Bristol Aeroplane. However, his public statement neither confirmed nor denied that purchase or lease commitments have been made. Representatives of Lockheed Aircraft also declined to comment.

Although the additional horsepower of the Centaurus is expected to improve performance, main reason for selection of the British engines is the saving of dollar exchange. Engine cost of the standard Constellation is estimated at about \$120,000 per aircraft. BOAC now has five of these transports in operation on its North Atlantic services. Estimates of the number of additional Constellations Britain may acquire range from about five to a maximum of 12.

* * * *

Costa Rica: The Costa Rican airline Transportes Aereos Nacionales, S. A. (TAN) has applied to the CAB for a foreign air carrier permit to operate scheduled services between San Jose and Miami via Havana. TAN stated that it did not propose to carry Miami-Havana traffic. Application stated company was incorporated April 30, 1943, and is 100% Costa Rican-owned.

Great Britain: British South American Airways will soon extend its present Caribbean routes on to Havana and Mexico City. BSAA now flies weekly on the route London-Azores-Bermuda-Jamaica-Caracas.

Brazil: Empresa de Transportes Aero-
vias Brasil has applied to the CAB for a foreign air carrier permit to operate scheduled services from Rio de Janeiro to Miami and New Orleans, with Puerto Rico as one of the intermediate points. The carrier, one of two designated by the Brazilian government for services to the U. S., has been operating frequent charter flights to Miami and New Orleans for some years. Until recently, this company was affiliated with TACA but is now completely controlled and managed by Brazilians. A 9% interest of TWA is believed to be the only foreign holding.

France: The French engine manufacturing firm, Rateau, is building a turbojet engine which develops a thrust of 3500 kilograms (7700 lbs.), according to a European source.

Denmark: The Danish Navy has purchased six Catalina amphibians, and air crews are now in the U. S. for flight training and checkout. Most of the aircraft will be used for patrol work in Greenland.



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April 1

MANUFACTURERS

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U. S. Firms Export 2,302 Civil Planes During 1946

Value of Aviation Products Totals Nearly \$115 Million

By SCOTT HERSEY

The foreign market is looking better for the aircraft and allied manufacturing industries in view of the nearly \$115,000,000 value placed on aeronautical products exported from the United States last year.

In reporting this figure, the Office of International Trade, Department of Commerce, said the prospects for continued large aviation exports this year are good, despite the decline in military and surplus sales.

Civil airplanes exported last year had a value of \$65,300,000, involving 2,302 units. Included in the total were 59 military planes valued at slightly over \$1,000,000; 2,490 aircraft engines, \$11,800,000; aircraft engine parts and accessories, \$12,855,000; and other parts and accessories, \$17,000,000.

By dollar value the 10 largest export markets for U. S. aviation products last year were: France \$14,221,079; Canada \$12,302,107; The Netherlands \$9,437,184; Brazil \$7,663,898; Mexico \$5,908,203; Australia \$5,889,784; United Kingdom \$5,671,462; Venezuela \$5,320,695; Sweden \$4,849,471 and Argentina \$4,189,051.

On the basis of planes alone, excluding engines, parts and accessories, Mexico received the largest number with a 439 total valued at \$4,243,000. Others topping the plane export list included: Argentina with 341 valued at \$2,445,000; Canada 340 at \$2,412,000; Union of South Africa 204 at \$1,688,000; Brazil 151 at \$3,707,000; Peru 74 at \$1,122,000; Venezuela 69 at \$4,436,000; Columbia 60 at \$1,829,000; Cuba 46 at \$788,000; Chile 57 at \$463,000; Uruguay 55 at \$144,000.

Total airplanes shipped by areas showed North America 791 valued at \$7,202,400; Central America 191 planes at \$1,005,000; South America 842 at \$15,287,000; Europe 217 at \$29,424,000 and the rest of the world 261 with a value of \$9,373,000.

1,224 Personal Planes Exported

These figures were compiled by the export service and the industry planning service of the Aircraft Industries Association. The AIA Personal Aircraft Council reported a total of 1,224 personal planes exported in 1946 by nine reporting manufacturing companies—Aeronca, Bellanca, Cessna, Fairchild, Funk, North American,

Piper, Republic and Stinson. Net billing value was \$2,898,760.

The figures represent 5.65% by number and 6.2% by value of the total personal aircraft production of these firms.

February personal plane exports totaled 156 valued at \$479,763, representing 9.2% of the total production and 8.6% of dollar value. The February exports showed an increase over January figures which were 119 planes valued at \$376,124, representing 6.2% of both total production and dollar value.

Martin 2-0-2 Shows Well in Flight Tests

First performance figures on the Martin 2-0-2 transport indicate that the airplane will far exceed its original design specifications in a number of phases.

The 2-0-2 attains a cruising speed of 280 mph at 10,000 feet, with 1440 hp per engine. Using this same power at 16,000 feet, the 2-0-2 will cruise at 300 mph. The 280 cruising speed is about 100 miles faster than the present twin-engine transports.

Because of the higher speed and higher payload, the break-even point on this 40-passenger plane is 19 passengers.

The stall speed of the plane was estimated to be 83 mph. However, the new type flaps and van Zelm ailerons are developing higher lifts than originally thought possible and landing and stall speeds of 75 mph have been consistently realized. Maximum rate of climb has been proved at 1425 feet per minute.

\$500 Reduction Brings Silvair Price to \$2,495

Price of the all-metal 65 hp Silvair standard model is being lowered by Luscombe Airplane Corp., to \$2495, a reduction of \$500.

L. H. P. Klotz, president, said the move was "dictated by the belief that prices in general are too high for the consuming public."

Tests Begin for Hughes Boat

Hughes Aircraft Co. has started static tests of the huge Hughes H-4 flying boat at its graving dock at Long Beach.

1,950 Personal Planes Shipped in February

Personal aircraft shipments in February, 1947, totaling 1,950 units valued at \$6,158,000 were reported by 13 manufacturers.

Although February shipments showed a decline as compared to January shipments of 2,179 units valued at \$6,733,000, this was accounted for primarily by February's fewer working days.

Production data for the 13 companies reporting for both months follow:

Company	Complete Aircraft Shipments	
	February 1947	January 1947
Aeronca	173	161
Beech	12	1
Bellanca	17	51
Cessna	310	420
Engineering & Research	118	124
Funk	4	7
Globe	N.A.	N.A.
Luscombe	81	120
North American	221	238
Piper	571	665
Republic	126	103
Stinson	247	236
Taylorcraft	42	31
Texas Engineering	18	22
Total	1,950	2,179*

N.A.—Not available.

*—Corrected to include Engineering & Research.

New Fairchild Plane Undergoing Test

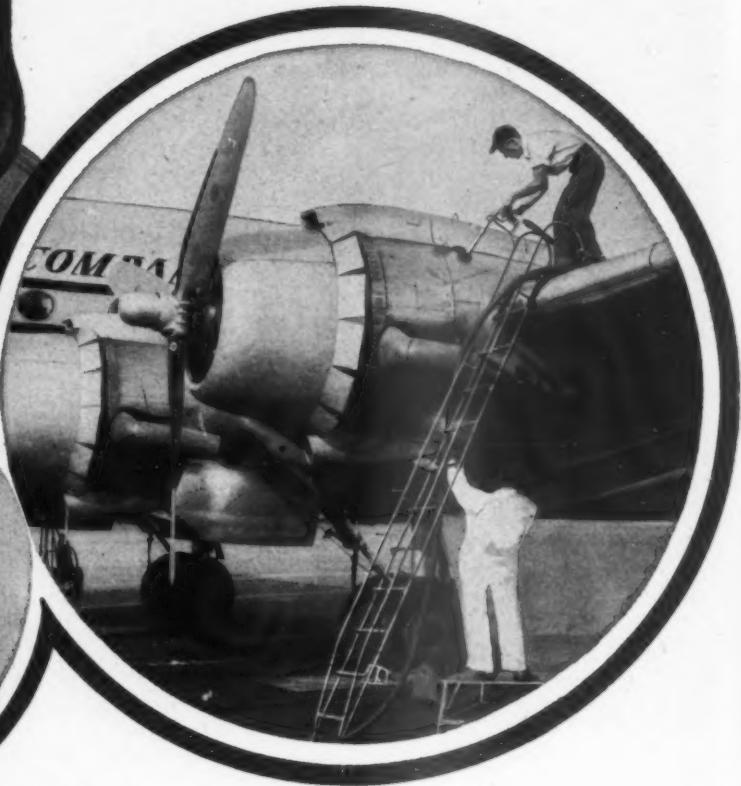
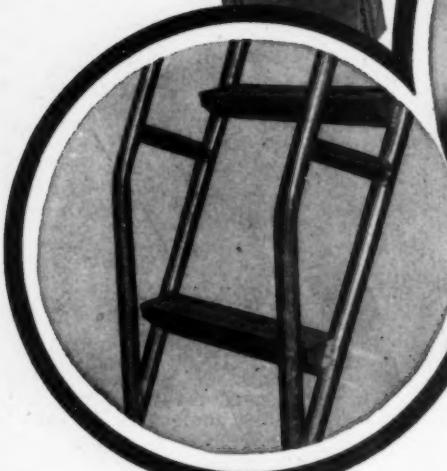
First experimental model of Fairchild's new four-place personal plane is now undergoing flight tests at Strother Field, Kans., and a cargo version of the present model F24 will be on the market this year.

The announcement was made by Harry M. McKay, general manager, Fairchild personal planes division of Fairchild Engine and Airplane Corp., at Strother Field in connection with a two-day sales conference.

The new personal plane, now under development, is of low-wing, all-metal, tricycle landing gear design. No announcement concerning marketing plans was made, but it was indicated the new craft, designated the Fairchild Model 47 will not be available for delivery to the public until early in 1948. No price range was announced.

The sales program this year, however, will feature a cargo version of the Fairchild F24 four-place airplane called the Rancher. McKay indicated it was being produced to satisfy the specialized needs of such organizations as the Flying Farmers and industrial groups. A folding rear seat and right front seat transforms the aircraft quickly from a personal transport to a cargo carrier. Its cargo payload is equivalent to the weight of three passengers and baggage.

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Industry Notes

Secret Plant Sold: A "top secret" wartime experimental plant, built by the government for production and testing of solid jet propellant units, has been sold to the wartime operator, Aerojet Realty Corp., for \$420,000.

Piper Orders: Firm orders for 1,895 Super Cruisers and Cub Specials for delivery within the next three months were left with Piper Aircraft Corp., by Piper distributors and their representatives from 52 distributing areas who attended a two-day conference at Lock Haven. Sales goal for 1947 is 10,000.

FPC Equipment Sales: The Eclipse-Pioneer Division of Bendix Aviation Corp., has announced orders totaling more than \$1,250,000 since the first of the year for its new electric Automatic Pilots and Flight Path Control (FPC) equipment.

Allison Jets: Complete responsibility for the AAF J33 jet engine, originally designed and developed by General Electric is now centered at Allison Division, General Motors. The J33 or TG-180 axial flow gas turbine, is also produced principally at Allison. General Electric retains engineering and design responsibility for the J33 and will continue to supply the AAF with a number of engines, although Allison is scheduled to build a majority of the units for which the Army has contracted.

AVCO Mfg. Corp.: Stockholders of The Aviation Corp. have approved changing the name of the company to AVCO Manufacturing Corp. The change was made as the result of a broad shift in the character of the firm's operations.

Martin Licensee: Aircraft Mechanics, Inc., of Colorado Springs, Colo., has been licensed by The Glenn L. Martin Co., to manufacture and sell Martin-developed aircraft ground handling and servicing equipment.

Vultee Division Closed: The Vultee Division of Consolidated Vultee Aircraft Corp. will be discontinued July 1 because of the recent cancellation of the YP-81 contract. Manufacture of B-36 bomber components which has been carried on at Vultee Field will be returned to the Fort Worth Division and experimental projects for the Army and Navy will be moved to San Diego.

New Bendix Contract: Bendix Products Division, Bendix Aviation Corp., has been awarded a contract of undisclosed amount to supply wheels and brakes for Consolidated Vultee's new 139-ton B-36 bombers.

Grumman Orders: New orders for Mallard amphibians received by Grumman Aircraft Engineering Corp., total 30, representing a gross of about \$3,450,000.

Beech Foreign Sales: Beech Aircraft Corp. delivered a total net volume of \$2,740,000 to foreign purchasers in 1946, exceeding the company's best prewar year, including both foreign and domestic sales.

Martin Ends Conversion: The Glenn L. Martin Co., has ended its conversion program with delivery of the final three C-54's to KLM. In a year and a half, 101 C-54's have been stripped of military features, cleaned, overhauled and outfitted with passenger facilities for 13 different airlines.

Waco Test Flight: The Waco Aircraft Co., marking the 25th anniversary of the building of its first airplane, announced that its newest plane, the Aristo-Craft, had completed its first test flights. The Aristo-Craft is a four-place, two-control plane with pusher-type propellers.

Manufacturing Personnel

Lee H. Smith, who recently resigned as executive vice president of Aeronca Aircraft Corp., has been appointed sales manager of Beech Aircraft Corp. Smith has been active in aviation sales and sales administration since 1930.



Trelease



Tate

Walter V. Trelease, associated with Kellett Aircraft for 16 years, has been designated manufacturing representative in charge of sales and product development for All American Aviation. Lambert R. Pistoles, formerly project engineer for Propeller Division of Curtiss-Wright, is now production engineer for All American.

George Tate, former director of district sales and service, has been promoted to director of export sales for Sperry Gyroscope Co. E. F. Lazar, former federal and electronics sales manager, has been designated to handle military contracts, and A. R. Weckel is now handling commercial sales in U. S. and Canada.

H. H. "Slim" Lewis, chief production test pilot for Boeing Aircraft Co., has retired to his 30,000-acre ranch in Wyoming. He started flying the mail in 1918, was chief pilot for United Air Lines and then chief pilot for Trans-Canada Air Lines before joining Boeing.

Leo A. Carter, who has been with Douglas Aircraft Co. for 16 years, has been named manager of the parent plant at Santa Monica. He succeeds G. A. Huggins, who is on extended leave of absence following a serious illness.

Lt. Gen. Barney McK. Giles (Ret.), who joined Air Associates Inc. in January as director of engineering, has been elected a vice president of the company.

Kellett Retains Office Despite Ouster Effort

W. Wallace Kellett, president, Kellett Aircraft Corp., retained his office at a recent stockholders meeting and saw elected a board of directors favorable to his policies, despite the efforts of five members of the old board to oust him.

A group composed of John Bromley, William T. Fleming, R. G. Kellett, Earl D. Osborn and R. S. Saltus urged the stockholders to replace Kellett, contending the best interests of the company would be served by the election of a president who would act in closer cooperation.

The stockholders rejected the bid for reelection of these five members of the board whom Kellett declined to endorse. Those elected, in addition to Kellett were: W. W. Brinkerhoff, Sidney G. Edwards, Charles E. Hunter, Robert L. Johnson, C. S. Jones, W. Paul Jones, Oliver H. Payne and Galen Van Meter.

Stockholder Charges Are Denied by Bell

A group of Bell Aircraft Corp., stockholders have formed a committee with the object of electing a new majority of the board of directors at the company's annual meeting April 21.

The committee issued a statement with a letter to the stockholders which charges "the present management of the company with placing the material benefit of the president (Lawrence D. Bell) ahead of the future operations and development of the company."

The group represents about 10% of the total shares outstanding. Bell, in commenting on the action, said "the action of a minority stockholders committee came as no surprise. For some time we have been aware that Jackson Martindell (one of the group) president of Fiduciary Management, Inc., 40 Wall Street, New York City, has been organizing such a committee. For more than one year, Mr. Martindell has been trying to dominate this corporation."

Bell said completely inaccurate statements regarding his 1947 compensation have been made. He added that his present salary was \$55,000, reduced from \$100,000 at his own request and that he expected to receive no other compensation whatever during 1947.

The stockholders committee had asserted that actual cash payments in 1947 for the benefit of Bell will exceed \$237,000. This sum, the committee stated, is in addition to the following benefits in a new employment contract for Bell which the present directors approved on Feb. 24: "(1) Mr. Bell will be employed for a term of five years at a minimum salary of \$55,000 per year; (2) The corporation will purchase for Mr. Bell, at a cost of \$160,000 a single premium annuity which would return him more than \$10,000 a year commencing in 1954; (3) The corporation will pay to Mr. Bell \$5 for each unit sold by it, in excess of 5,000 units, of a motorized wheelbarrow, said to have been invented by him."

"All these benefits," the committee's letter said, "would be in addition to the annual retirement income of \$18,000 to which Mr. Bell will become entitled in 1954 under the corporation's present pension plan, at a cost to the corporation of approximately \$23,000 a year."

AAF Contracts for 134 Lockheed P-80B Jets

Lockheed Aircraft Corp. has been awarded a contract for a new and improved version of the P-80 Shooting Star jet-propelled fighter plane. The contract, calling for 134 of the planes and involving \$8,681,960, is the fourth received by Lockheed from the Army Air Forces since the P-80 was first flown in 1944, and brings to 1,066 the number of P-80's delivered or on order. The new plane will employ water injection in its J-33 turbo jet engine.

* * * *

Profit or Loss Dependent Upon Equipment Efficiency

Analogy Drawn of Airplane As Machine Tool of Industry

By CLINTON R. HARROWER

If we can forget airplanes for a few minutes and think in terms of machine tools, we may reach a new understanding of one of the major factors in the current airline earnings picture.

A machine tool, of course, is merely a device which permits a greater quantity of things to be made more rapidly and more cheaply than by hand. As time goes on, machine tools tend to become more and more efficient, making obsolete and costly the tools already in use. And at the same time, expanding markets, made possible by the machine tools themselves, in turn make possible the utilization of more complex and more expensive but more efficient and in the long run cheaper machine tools.

Thus it is that any manufacturer in a highly competitive or in a rapidly expanding field at all times must be acutely machine tool conscious. His tooling can spell the difference between profit and loss. Upon it can depend his standing in relation to competitors.

From time to time re-tooling becomes necessary. Some times it is possible to accomplish this by shutting down the plant and production altogether. Old tools are dragged out, new ones put into position in new and more efficient production lines. Before the war that happened annually in the automobile industry. Sometimes, however, demand for the products is so intense that a shut down during change over becomes impossible. Retooling must not only take place during production but the output curve, if at all possible, must continue up. That happened frequently during the war in the aircraft manufacturing industry.

Either method has an unfavorable effect upon earnings. In addition to the possible slowing down, if not elimination altogether, of production and consequent loss of revenue, many extraordinary expenses are incurred to bite more or less deeply into profits.

Once the new production lines get into full swing, however, a rising profit curve is to be expected.

Airplane as Machine Tool

In the final analysis, the airplane is nothing more or less than a machine tool. It manufactures speedy transportation in the form of passenger miles, mail ton miles, express ton miles, freight ton miles. The more of such miles it can produce in a given day, the greater the opportunity has airline management to convert them into revenue miles.

52

The end of the war ushered in a new period for the airlines. New and more efficient types of machine tools became available for the production of a greater volume of transportation miles. The airlines entered upon the biggest re-tooling program in their history.

The re-tooling has been of the same general nature as that experienced by the aircraft manufacturers during the war. Demand for airplane miles was and is going ahead by leaps and bounds. A constant readjustment of "production lines" has been under way virtually since VJ-Day as new and improved types of aircraft have become available.

First was the DC-4, followed closely by the Constellation. Now another major phase is about to open as United and American put the new DC-6 into service. This will be accompanied by Eastern's use of the new 649 Constellation. Still to come are Boeing's Stratocruiser, Martin's 2-0-2 and 3-0-3 and Convair's 240. The re-tooling period may last for another year and a half.

While this is going on, the airlines are faced with financial problems which have not been experienced to any extent since the DC-3's first went into service years ago. A new type of airplane just isn't tossed into service willy nilly. Several months can elapse from the time the new type rolls from the factory door to the time it is ready to carry payloads. The airplane itself must be studied. There are purely mechanical features to be considered—new hangar docks, loading ramps. Pilots have to be trained. Ground crews must learn the airplane inside and out by heart. The entire airline must be revamped to handle the speedier schedules.

Labor Principal Cost

Labor is the principal cost in operating an airline. But when a new type of airplane is being integrated into the system there is always a certain percentage of employees working hard in non-revenue work.

One little example was noticed recently at La Guardia Field when United Airlines took a press party on a demonstration flight in a DC-6. In the hangar was another DC-6. Mechanics were swarming over the power plants, studying the new Pratt & Whitney R-2800-C engines. Ground crews were operating over and over again the new monorail loading device with which United has equipped its new Mainliner 300's. They were building for the future but at the moment were contributing nothing.

And once the new type airplanes go into service, the comparison with fac-

tory re-tooling continues. The plant manager doesn't simply push a button and have a re-tooled plant at 100% efficiency immediately. A shake down period is required to acquire the special know how needed for a smoothly running organization.

Just so with airlines. Maintenance, for example is bound to be slower, and hence more costly, at first because it takes time before the mechanics can move swiftly and surely. This cuts down the all important plane utilization figure. Eastern, for example, has been getting more than 12 hours daily service from its multi-engined aircraft. It wouldn't be at all surprising to see that figure drop at first say to eight hours for the new Constellations. That is no reflection on either the airplane nor on the airline. It is solely a matter of getting used to the new equipment. In the meantime, however, time costs money in an airline as well as in any other industry.

The annual report of Eastern Air Lines for 1946 gave some indication of the cost of integrating new equipment. Management created a special integration reserve of \$1,000,000 out of 1946 earnings to meet any contingencies. It probably won't be necessary to use the whole amount but it is a good thing to have around, just in case.

Equipment Should Bring Results

However, given good management, results should show up quickly as new equipment goes into operation because its greater efficiency will enable it to handle the demand for air transportation more smoothly. It has been estimated, for example, that while United's DC-6's will cost say 25% more to operate they will do 80% more work than equipment now in use. It is no secret that American's management is more than anxious to get its new aircraft into operation. Given any sort of a break, American's revenues this year could easily be in the neighborhood of \$100,000,000.

Experience of this time about a year ago gives a clue as to what may be looked for. As the four engined DC-4's went into service on National, United and American, the monthly earning statements started to climb. Then in September, 1946, just before the slump, came an historic example. One large airline was operating both DC-3's and DC-4's. In that month it lost several hundred thousand dollars with its DC-3's but more than made the loss up with the DC-4's so that on balance the line was still in the black.

Once this re-tooling phase is over, it is safe to say that several years will elapse before another major program will be necessary.

In the meantime, airline management is facing its severest test yet. Airplanes travelling at 300 miles an hour manufacture transportation miles much faster than at 185. That means that airline management is up against the same problem as makers of tin cans or automobiles. The faster the rate of manufacture, the more costly do mistakes become, but conversely the greater becomes the profit potential.

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American Airlines Reports '46 Salaries

American Airlines has filed its report of 1946 salaries and stockholdings with the Civil Aeronautics Board, giving the following information:

	Salary	Shares	Com. Pfd.
C. R. Smith, chmn. of board	\$50,000	.....	.....
R. S. Damon, pres.	40,000	5,000	.....
Amos Culbert, v. p.	17,500	500	.....
R. E. S. Deichler, v. p.	14,310	.....	.....
L. G. Fritz, v. p.	22,500	.....	.....
W. Littlewood, v. p.	22,500	5,000	.....
O. M. Mosier, v. p.	22,500	6,500	.....
R. W. D. Smith, Jr., v. p.	17,155	.....	.....
P. P. Willis, v. p.	25,000	.....	.....
H. K. Rullison, treas.	18,000	4,000	.....
C. W. Jacob, secy.	13,500	.....	20
W. G. Lipscomb, asst. v. p.	14,042	750	.....
W. H. Miller, asst. v. p.	15,000	670	.....
Carlene Roberts, asst. v. p.	8,500	100	.....
M. T. Staliter, asst. v. p.	9,999	200	.....
P. G. Larie, comptroller & asst. treas.	12,434	200	.....
V. J. Long, asst. secy. & asst. treas.	11,361	50	.....
R. L. Griffith, asst. secy.	5,336	325	.....
W. L. McMillen, asst. secy.	9,361	120	10
C. H. Kibbee, asst. treas.	11,900	.....	.....
T. O. English, asst. treas.	7,165	.....	.....
A. R. Bone, Jr., regional v. p.	10,000	1,000	25
W. N. Bump, regional v. p.	10,000	.....	.....
L. W. King, regional v. p.	10,000	.....	.....
M. D. Miller, regional v. p.	10,000	.....	30
C. R. Speers, Jr., regional v. p.	10,388	500	.....
Directors			
Harold T. Ames	3,000	.....	.....
Harry E. Benedict	2,100	.....	.....
James Bruce	1,100	.....	.....
Edward H. Butler	1,250	.....	.....
Amon G. Carter	92,000	.....	.....
Ralph S. Damon	5,000	.....	.....
Silliman Evans	500	.....	.....
John W. Farley	.....	.....	.....
Thomas S. Hammon	50	100	.....
A. N. Kemp	5,000	.....	.....
Walter S. McLucas	1,100	.....	.....
O. M. Mosier	6,500	.....	.....
Edgar M. Queeny	7,000	200	.....

More Pay for AOA Employees

An arbitration board award providing a general increase of 16c an hour for approximately 850 ground employees of American Overseas Airlines, Inc., represented in the Air Transport Division of the Transport Workers Union CIO, has been granted, retroactive to Jan. 1. The board also ruled on other wage and contract demands involved in the dispute.

Altschul Opens Consulting Office

Selig Altschul, former chief analyst for the Civil Aeronautics Board, has opened an office at 30 Broad Street, New York, to enlarge his aviation consultant practice.

AIRLINE STOCK MOVEMENTS VIOLENT

Two views of the same thing are shown in the accompanying charts which trace the course of airline securities with relationship to the stock market as a whole during the great bull market of 1942-46 and the subsequent decline. Chart I shows the conventional lines on an arithmetic scale which measures the actual ground gained or lost. Chart II is constructed on a semi-logarithmic scale which measures movements on a percentage basis.

Thus, movements from 25 to 50, from 50 to 100 and from 100 to 200, for example, would be represented by lines of different lengths on Chart I because they represent different amounts of ground covered. On Chart II, however, such moves would be represented by lines of the same length because in each case the movement would represent a gain of 100%.

Studied together, the two charts show that whereas the market as a whole advanced a greater number of points than did the air transport securities, actually the movements in the latter were far more violent. Market analysts hold that such violence is natural in the case of a comparatively new industry embarking upon a period of great expansion. However, it also indicates that the market is dealing with a great number of unknowns and is easily swayed by misunderstandings.

This does not provide a too favorable background for new financing, which makes the success of recent new issues all the more impressive. Analysts believe it would be to the airlines' own advantage to keep such misunderstandings at a minimum by making every effort to help the laymen of the financial world to grasp the true significance of developments within the airline industry.

C. R. H.

Financial Briefs

United Air Lines reported that the entire issue of its new 4½% cumulative preferred stock has been sold. Holders of rights to subscribe to the preferred took up 83,089 shares and the balance was sold to 38 underwriters headed by Harriman-Ripley and Co., Inc. The stock was offered at the rate of one share of preferred for each 19½ shares of common to common stockholders at the close of business Feb. 11.

Breeze Corp. directors declared a dividend of 40c a share on the common capital stock, payable Mar. 12 to stockholders of record Mar. 5.

Boeing Aircraft Co. declared a dividend of \$1 on common stock to stockholders of record Mar. 20. Payment was made April 4. Last dividend of the same amount was paid April 19, 1946.

Helicopter Air Transport, Inc., Camden, N. J., is offering 270,000 shares of capital stock with a par value of 10c to the public at \$3.50 a share through a group headed by Strauss Brothers.

Pacific Finance Corp., of California, in which Lockheed Aircraft owns 95.01%

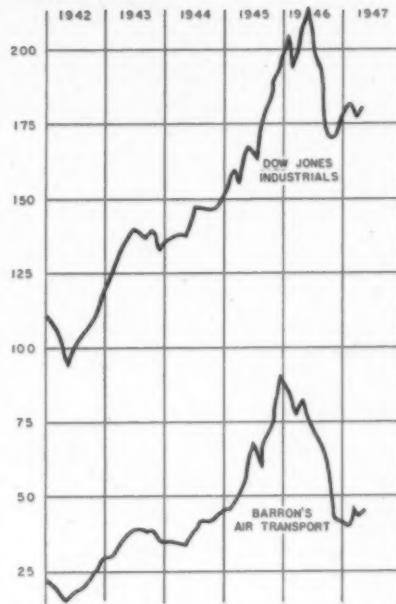


Chart I—The market as a whole advanced a greater number of points in 1942-46 than did air transport shares.

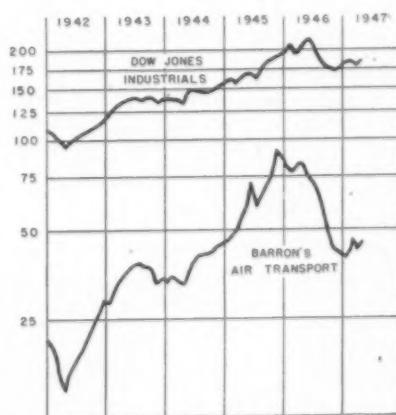


Chart II—On a percentage basis, fluctuations in air transport shares have been more violent than the market as a whole.

common stock interest reported net earnings in 1946 of \$350,446. After deducting from this amount the preferred stock dividends paid during the year, Lockheed's share of earnings available from the common stock represents a return of 4½% per annum on its investment.

Luscombe Airplane Corp., stockholders have voted to permit the authorized capital to be increased from 1,000,000 to 1,500,000 shares of common stock of 50c par value.

American Overseas Airlines has filed a registration statement with the Securities Exchange commission for an unspecified amount of subordinated income debentures and stock purchase warrants which will offer stockholders an opportunity to buy shares of the company's \$1 par capital stock under a plan to raise new money for purchase of additional equipment.

Summary of 1946 Fiscal Reports

Manufacturers

Douglas Loses \$2,019,478

Douglas Aircraft Co. reported an operating loss of \$2,019,478 for the fiscal year ended Nov. 30 last. After application of the tax carryback, income of \$2,180,522 or \$3.63 per share of capital stock was recorded compared with \$14.93 per share in 1945.

A decline in sales to \$106,720,701 as compared with \$744,682,664 in 1945, and the write off of more than \$11,000,000 of development and manufacturing losses were major causes of the operating deficit before tax adjustment.

The backlog of unfilled orders amount to \$209,200,000 of which 56% represented orders from domestic and foreign airlines. New orders less cancellations during the last quarter of 1946 totaled \$43,600,000; shipments during the period were \$21,300,000.

Martin Nets \$3,363,013

The Glenn L. Martin Co. reported a net income, after all charges and reserves, of \$3,363,013 for 1946. Net sales amounted to \$37,640,958. Cost of sales was \$34,853,051. Total dividend payments in 1946 to the approximately 10,000 shareholders were \$3,402,666. The quarterly dividend policy has been continued at the same rate and the first payment for 1947 of 75c a share was made on Mar. 17. The company has approximately \$30,000,000 of backlog orders.

Lockheed Loses \$10,739,689

Lockheed Aircraft Corp. reported an operating loss of \$10,739,689 after tax credits in 1946, but increased its surplus \$3,056,785 by availing itself of its reserve for postwar adjustments of \$13,796,474.

Total sales for the year were \$113,595,663, as compared with \$417,615,160 in the preceding year. Lockheed's present backlog of unfilled orders totals \$153,732,196 of which \$111,796,196 or approximately 73% represents military contracts. Capital and surplus accounts as of Dec. 31, 1946 totaled \$40,981,437 and working capital \$35,652,350.

Robert Gross, president, noted in the report that "at present there is intense competition between more than a dozen large aircraft manufacturers for a limited volume of commercial transport and military business—a volume of business that may not be adequate to support the industry in its present size."

\$6,060,749 for United Aircraft

United Aircraft Corp. reported a net income in 1946 of \$6,060,749 after giving effect to carry back credits of \$10,624,164. This compared to a net income of \$12,855,280 in 1946.

The annual report said the corporation was emerging from the "most critical period in our history," and that operations turned the corner in the final quarter of 1946. The four manufacturing divisions of United—Pratt & Whitney, Hamilton Standard Propellers, Chance Vought and Sikorsky—entered 1947 with \$285,000,000 of orders with deliveries extending well into 1948.

Total assets as of Dec. 1946 amounted to \$145,346,088 compared with current liabilities of \$38,369,598, including advances on sales contracts of \$17,901,907.

Boeing Loses \$327,198

The Boeing Airplane Co. and subsidiary company reported a net loss of \$327,198 for 1946 after transfers from reserves and estimated tax refunds. Boeing's total income for the year was \$17,127,060 against total costs and expenses of \$22,039,749. The backlog of unfilled orders on Dec. 31 was \$210,389,000 of which \$75,773,000 is commercial and \$134,616,000 military.

The estimated refund of Federal excess profits tax under the carryback provisions, less adjustments of the previous year's tax liability, will amount to \$3,335,491.

Convair Loses \$2,775,619

Consolidated Vultee Aircraft Corp. reported a net loss of \$2,775,619 for the year ended Nov. 30, 1946, after an estimated credit of \$6,340,417 from tax carry back. Net income in the 1945 fiscal year amounted to \$6,748,932.

The next loss included costs of current experimental and development projects. Sales during 1946 amounted to \$13,705,771, compared with \$644,053,838, including contract termination claims, the year before.

At the close of the fiscal year the backlog of unfilled orders amounted to \$328,865,000, exclusive of products unrelated to aircraft manufacture. Of this amount \$226,590,000 represents contracts for military production; \$67,925,000 for Army and Navy experimental and research projects and \$34,350,000 for commercial and personal aircraft. The backlog the year previous was \$229,610,000.

Grumman Nets \$337,771

Grumman Aircraft Engineering Corp. reported net earnings for 1946 of \$337,771, which was less than 1% of gross sales totaling \$37,615,540. Dividends totaling \$2 per share were paid to stockholders in 1946, an increase of 50c per share over the \$1.50 rate paid in 1941 and adhered to throughout the war. The company's record of net income earned and dividends paid in every year has been maintained for 17 years. Development and experimental costs of \$1,605,013 were charged to operations in 1946. The company set aside \$4,500,000 from earnings as reserve.

Bell Loses \$657,000

Bell Aircraft Corp. reported sales in 1946 of \$11,546,727, with a loss of \$657,000 after adjustment for additional income in contracts terminated in prior years and tax carryback credits. Bell's net in 1945 was \$4,465,297 on total sales of \$270,416,614. Backlog totals \$23,600,000. Net working capital at the end of 1946 amounted to \$11,332,000.

Bendix Nets \$785,914

Bendix Aviation Corp. reported consolidated net income of \$785,914 for the fiscal year ended Sept. 30, 1946, after providing for special income items, compared with \$15,498,252 the previous year. Consolidated gross sales, royalties and other operating income and its wholly-owned domestic subsidiaries, less discounts, returns and allowances, amounted to \$106,001,984, compared with \$649,398,824 for the fiscal year, 1945. Total current assets as of Sept. 30 last were \$100,199,859, including cash of \$32,958,831 and total current liabilities \$39,057,156.

Airlines

American Loses \$252,467

American Airlines reported a net loss of \$252,467 for 1946 reflecting a net loss of \$26,795 from an American Airlines' operations and the company's proportionate interest, or \$225,672, in the net loss sustained by American Overseas Airlines. Net loss was reduced by \$635,000 as a result of the tax carryback. Total federal tax refund receivable is \$1,280,000. As of Dec. 31 current assets were \$55,340,431 as compared with current liabilities of \$20,261,437.

Western Loses \$943,238

Western Air Lines reported a loss of \$943,238 after adjustments for tax carryback in 1946 compared with a 1945 profit of \$208,102. Operating revenues increased 66%. Western's 1946 revenues totaled \$11,891,297 compared with \$7,157,928 in 1945. Expenses increased from \$6,852,613 in 1945 to \$13,112,670 in 1946.

PCA Loses \$2,550,710

Pennsylvania-Central Airlines reported a net loss in 1946 of \$2,550,710. Operating revenues increased from \$10,078,973 in 1945 to \$17,867,219 in 1946.

TWA Loses \$14,347,836

Transcontinental & Western Air reported a net loss in 1946 of \$14,347,836. Operating revenue was \$57,360,993 against operating expenses of \$72,280,498. This resulted in an operating loss of \$14,919,503. TWA had an operating income of \$3,200,000 the year before. TWA reported current assets of \$25,533,985 and current liabilities of \$19,805,685. Property and equipment (net after depreciation) totaled \$33,537,603, or \$15,435,700 more than in 1945.

Braniff Nets \$34,100

Braniff Airways reported a net income of \$34,100 after taxes for 1946. Operating revenue for the year was \$10,506,307, a 33% increase over 1945. This gain was more than offset by an increase in operating expenses from \$6,918,587 in 1945 to \$10,682,412 in 1946.

Eastern Nets \$4,504,643

Eastern Air Lines reported a record net income in 1946 of \$4,504,643, a gain of 112% over 1945 earnings. It was equal to \$1.46 a capital share, after deduction of \$1,000,000 for special expenses in connection with integration of 14 Lockheed Constellations into the fleet. Total operating expenses for the year rose to \$33,844,074 as against \$18,878,575 in 1945. Total current assets amounted to \$24,805,778; current liabilities \$12,814,029 and net working capital \$12,091,749.

United Nets \$1,086,961

United Air Lines reported a net income for 1946 after taxes of \$1,086,961, equivalent to 54c per share of stock outstanding Dec. 31, 1946 as contrasted with net income of \$4,203,815 in the preceding year. Operating revenues reached an all-time high of \$64,948,159 an increase of 65% over 1945. There was a 97% gain in operating expenses (exclusive of income taxes) totalling \$62,474,030. Total current assets were listed at \$19,474,506 and total current liabilities at \$17,382,309.

Operations and Maintenance Review

Including

COMMUNICATIONS—NEW EQUIPMENT—GROUND FACILITIES

Commercial Value of JATO Faces Early Operational Tests

Jet Assist Cost Is Weighed Against Increased Payload

By FRED HUNTER

The balance sheets of the Contract Air Cargo Division of American Airlines may very well contain the answer to the future application of jet assist to increase commercial air transport payloads.

American's contract division is equipping its 10-plane fleet of Douglas DC-4 air freighters for the first use of the JATO motor manufactured by the Aerojet Engineering Corp. of Azusa, Calif. in regular commercial operations, and from its experience record important information is expected to be developed to determine the value of auxiliary rocket power to overcome take-off weight penalties.

If American's experience with JATO on the air freighters is satisfactory, the airline plans to install the equipment on its passenger planes flying the Mexico City run. For the 7,347-foot high airport at Mexico City, Civil Air Regulations limit the gross weight of the DC-4 to 62,500 pounds. With three jet assisted take-off units developing 1,000 pounds of thrust each, American will be able to add 10,500 pounds of load, increasing maximum gross weight to 73,000 pounds.

TACA of Nicaragua also is experimenting with the Aerojet motors for the DC-3 equipment it flies in the jungle areas of Central America. Because of the character of its operation, TACA's problem is unique. It wants to carry the motors along on regular flights as a standby source of power in the event of engine failure during or immediately after take-off. Aerojet is engaged in vibration tests on the JATO motor to determine the maximum possible flying hours. It appears that this is economically possible if the flying time is not less than 100 hours.

Foreign interests, too, have started tests of the Aerojet motors. Recent experimental orders include the Swiss government, the Swedish Royal Air Board and the British government. The British purchase is believed to be for tests with the Vampire.

Four Commercial Uses

The Aerojet corporation reasons that jet assisted take-off has four applications in commercial operation: (1) eliminates engine failure hazard during take-off and subsequent climb; (2) permits high altitude airport opera-

tion; (3) makes small airport operation practical; (4) insures maximum payload.

E. E. Nelson, Aerojet's chief pilot and sales manager, has no difficulty in convincing a skeptical pilot that a JATO motor is a handy gadget for take-off. He does this by firing the jet motor and then shutting off one of the DC-3's engines while the take-off run still is in progress. The one engine assisted by the jet motor takes the DC-3 off and clears a 50-foot obstacle, as per Civil Air Regulations, in 2,587 feet at a sea level airport.

But persuading an airline executive that jet assisted take-off is economically justified is another story. Initial cost of a new jet motor is \$185 each. It has a relatively long life, because it can be used repeatedly, but cartridge re-fills also are fairly expensive. The motors have to be sent back to the Aerojet corporation for reconditioning and refilling and the cost is \$125 each.

Dan Kimball, Aerojet's vice president, calculates that the use of JATO becomes economically feasible if it will provide an additional 500,000 pound miles of payload or more per motor.

Thus, within the continental boundaries of the United States the JATO market would be limited to small airports which do not have the 4,000-foot runways required for maximum gross weight operations, or to high airports where the altitude restricts the take-off weight. But in Mexico, Central America and South America there are many high altitude airports and also many where the runway lengths are less than 4,000 feet. In one instance, a U. S. air carrier operates into a South American airport with an elevation of 13,200 feet. In these areas of operating limitations, the excess power of the JATO motors would save the severe payload penalties imposed by the transport category on any transport airplane.

Although conception of the jet assisted take-off motor in 1939 was of Army origin—as a means of getting big bombers on the wing with heavy loads—it was the Navy which made wide-spread use of them and tested them thoroughly during the war. The Army solved its problem by using earth-moving machinery which cleared air strips faster than planes could be equipped with jet units, but the Navy found jet assistance the most satisfactory means of getting more planes off carrier decks with heavier bomb loads and of supplying new wings for its sea birds. Jet assist on take-off enabled the Navy's flying boats to take-off regardless of too rough or too smooth water—down wind as well as



JATO Installation—This close-up shows how four jet assisted take-off motors made by the Aerojet Engineering Corp. are installed on the Douglas DC-4. The motors can be used repeatedly through reconditioning and re-filling with new power cartridges. The igniter assembly is inserted after the motor is attached in place. The assembly consists of a steel body, a primer charge, and a main charge.

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into the wind. Moreover, by shortening the period of time when engines and propellers are subject to heavy water spray from the hull, the use of JATO increased the thrust available from the props and reduced erosion of propeller blades.

NATS Relies on JATO

Most of the 100 units a day now being produced by the Aerojet Engineering Corp. go to the Navy and the Naval Air Transport Service regularly uses the motors to boost take-off loads on its big Martin Mars boats between Alameda and Honolulu.

Aerojet's Model 12AS-1000D-5 JATO motor for use by DC-3 and DC-4 transports is a solid propellant rocket that delivers 1,000 pounds of thrust for 14 seconds. DC-3's are fitted for two motors; DC-4's for four. The propellant cartridge is contained in a steel cylinder closed at the forward end and with an exhaust nozzle at the aft end. Fired by an igniter at the flip of a switch by the pilot, reaction force is produced by the thrust of the blast through the nozzle.

The JATO motors are relatively simple to handle. They have a guaranteed storage time of one year in temperature within the range of 0°F to 130°F. They are attached to fittings installed either beneath the fuselage or the wings so that the thrust line passes approximately through the airplane center of gravity and at the same time directs the jet stream clear of all parts of the airplane. The motor can be attached by one man.

Attachment brackets for a DC-4 weigh approximately 40 pounds and cost \$750 to install. A loaded motor weighs 200 pounds, making a total weight for a DC-4 equipped for take-off 840 pounds.

The JATO unit first was developed by California Institute of Technology scientists headed by Dr. Theodore von Karman, director of the Guggenheim Aeronautical Laboratory. They incorporated the company to manufacture the units in January 1942. During the war the plant layout at Azusa, Calif. expanded to 80 buildings spread over 70 acres. In 1944, the Aerojet corporation became a division of The General Tire and Rubber Co. It employs 550 workers and in addition to the production of the JATO units is engaged in wide-range research program, covering both the Army and the Navy, in the development of rocket-type power for supersonic carriers, especially missiles.

Kirchner Appointed to Tulsa Engineering Post by American

Appointment of Otto Kirchner as director of engineering for American Airlines at Tulsa has been announced by William Littlewood, v. p.-engineering. Since 1945, Kirchner has been director of research and development in New York. In his new post, he will have charge of all engineering activities for the airline in the Tulsa area.

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An Open Letter:

Boeing Engineer Has Say on Seat Issue

Dear Wayne:

Your article in the February 1 issue of *American Aviation* entitled "From Seats to Shaving" prompts me to take the stand in defense of the aircraft engineer. While admittedly you have touched on some very legitimate complaints, in most cases you are directing your fire at the wrong people, as these design features involve many problems not under the control of the engineers. Airline requirements, economic considerations, and other factors all tend to influence and compromise each detail of the design. Further, Wayne, your over-simplification of aircraft design in general and of seats in particular, indicates we should brush you up on some of the problems which now vex the aeronautical engineer and make him gray before his time.

To assume that the engineer has not experienced a long trip in one of his "contraptions" is skating on thin ice. While certainly not the most travelled aircraft designer in the world, I have twice flown to the Orient, have visited Australia and the South Sea Islands, have travelled by air to Europe, Africa and South America and have flown countless trips across this country. Practically all of our key designers have flown almost as much.

Inconveniences Shared

During these journeys, I have suffered some of the inconveniences you mentioned, others are foreign to me. But through it all, I have come to appreciate the airplane for what it is; a means of getting about the world as fast as possible and as comfortably and conveniently as practicable. Up until now, airplanes have not been designed for extremely long hauls in luxurious comfort. If such an objective had been the prime design requirement, the transport aircraft of today even with their limitations would not be in existence because the initial cost and operating expense of objectively designed aircraft would have precluded their utilization to an extent necessary to pay for them and the development of the airlines to operate them. It has been necessary to go through the various stages we have experienced to build the economic structure necessary to support air transportation.

For example, let's look at this seat problem. You point out a number of faults, including lack of footrests, certain "inelastic" qualities and generally poor design which makes trips of more than 24 hours nearly unendurable.

It might be said at the outset that the human body was not built to sit for 24 hours in *any* seat. Offhand, it seems a bit unfair to blame the design of a particular seat for body discomfort on extended flights. The answer, in part, is in designing an airplane in

Beall Writes Parrish Manufacturers' View

which passengers will be able to get up and stretch—even walk around if they wish. Another solution is to increase cruising speeds appreciably to shorten long trips. That's why we feel the Boeing Stratocruiser will measure up. On this double-deck transport there will be room to relax and an opportunity for a change of surroundings by visiting the lower deck lounge, while flying at more than five mile-a-minute speeds. The seat spacing has also been increased substantially although it will not be ideal for long haul trips until the economics of air transportation will support a fifty-inch or more fore and aft seat spacing and corresponding increases in aisle and seat widths.

What constitutes a "typical inelastic seat," Wayne, has me baffled. An aircraft seat, or any seat for that matter, cannot be too soft or it tires one more than a hard seat over a period of time. Furthermore, it must accommodate all sizes and weights of passenger with equal satisfaction. The same seat, for example, must support a 100-pound blonde without springing her to the luggage rack and must be equally pleasing to the man of 250 pounds. This as you can imagine, is a weighty problem.

Seat Research

At Boeing, we established a special section in the engineering department for the sole purpose of designing a better aircraft chair. We think we found some of the answers after analyzing all available research and physiological material on the subject and after building numerous experimental models. We solved the variations in size and weight by a new cushion and seat bottom suspension and by special contouring of the chair back to accommodate automatically unusual personal dimensions.

Your statement that "it shouldn't be such a hard job to develop a seat without adding materially to the weight," is not a surprising assumption until you know the facts. We have found the design of a satisfactory aircraft chair to be one of the most difficult problems we have ever tackled. Since everyone spends a considerable amount of time in a chair or seat, the woods are full of "experts" on this subject. We have found it absolutely impossible to get any kind of consolidated opinion from airline personnel or passengers on the subject of features and details of chair design.

The aircraft engineers can hardly be blamed for the lack of a footrest. Most of our airlines are not willing

to assume the added cost or sacrifice the payload required to provide them.

Possibly, Wayne, you are basing your complaints of air transport on some trips in half-converted war surplus airplanes, the design of which is seven to eight years old. Aircraft design has advanced considerably since 1939. A complete picture of what changes have been made will be a matter of record when airplanes such as the Boeing Stratocruiser get in service.

We aircraft engineers are concerned with passenger comfort. As a matter of fact, at Boeing we actually spend a tremendous amount of time and energy on passenger cabin furnishings and accommodations. And, Wayne, we do not employ aerodynamicists to handle design problems directly pertaining to passenger comfort, but we have had a great number of other kinds of designers of all professions assigned to these projects. We also have retained outside mechanical and industrial design consultants, at considerable expense, in order that we might provide the utmost in passenger comfort and luxury on Boeing transport airplanes.

Cordially,
WELLWOOD E. BEALL
V.P.-Engineering and Sales,
Boeing Aircraft Co.

A Reply

Dear Wellwood:

Your thoughtful and constructive comments on my article are sincerely appreciated. What I had to say about the 60-hour flight from Cairo was written as a fare-paying layman. I certainly endeavor to understand the complexities of engineering and the difficulties in the way to bring out overnight a transport airplane suitable for trips of 24 hours and more.

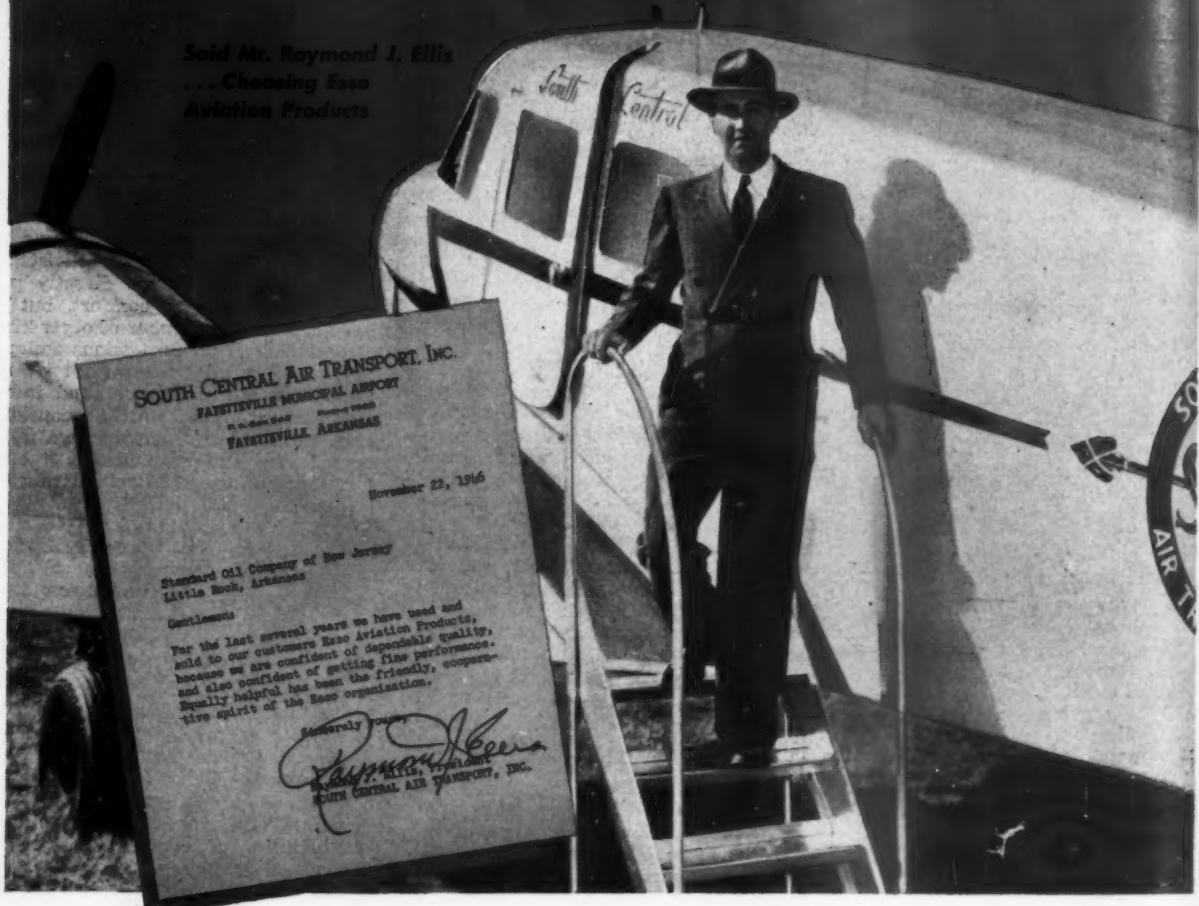
On the matter of seats I cannot quibble. Boeing's current research on seats has been a very fine endeavor. The bulk of my complaint about the Cairo-Washington flight had to do with matters which airline management can overcome—such as a coat hook in the men's lavatory, water to wash and shave with, and some semblance of cleanliness. These are airline matters, although basic engineering has something to do with the ability of airlines to maintain high standards of service.

Above all, however, the airplane is a mighty fine article. I still wouldn't travel any other way whether it be a 200-mile hop between cities in the U. S., or a 30,000-mile tour anywhere in the world. Progress is being made on all fronts from operations to passenger comfort.

Wayne W. Parrish.

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Said Mr. Raymond J. Ellis
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Mr. Ellis is President of South Central Airport ... he owns and manages Fayetteville Flying Service at Fayetteville, Arkansas ... and for the past six years has been conductor of flight training programs. During the war he trained over three thousand pilots under C.P.T., W.T.S. and Army Air Corps Indoctrination programs.

Obviously, Mr. Ellis knows airplanes and the airplane business ... and he selected Esso Aviation Products in preference to all others because of "dependable quality ... fine performance ... the friendly, cooperative spirit of the

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Pan Am and American Overseas to Test Air-to-Ground Communication for Passengers

Two airlines operating overseas, Pan American and American Overseas, are making preliminary moves toward providing plane-to-ground communication for their passengers.

The Federal Communications Commission has granted Pan American permission to experiment with a radio system that will provide telephone service to passengers traveling in planes. The commission directed that no charge be made to passengers during the authorized six-months period of experimentation.

The method would be the same as that used to handle telephone communication from deep sea ships. Pan Am plans to install necessary equipment in one or two airplanes to determine whether they can offer the same service. The transmitter on board the plane would communicate with coastal telephone stations. The experiments will be made to determine costs in weight, equipment and services.

Secondary to Safety

The FCC emphasized that any public service is secondary to safety and if necessary the public service must be suspended for safety communications. Under no circumstances could such service be transmitted on safety frequencies.

American Overseas has filed formal application for radio telegraph service which will require two transmitters and two receivers on each plane. The FCC has not yet acted on the application but it appeared likely that American's application would be approved.

The service proposed by American would be similar to ship-to-shore message communication.

A number of executive-type airplanes operated by private concerns have plane-to-ground telephone service, but it has never been applied to commercial operations.

Constellation Passes Rigid Winterization Tests in Alaska

A Lockheed Constellation, in 325 hours of winterization tests conducted during the last two years at Fairbanks, Alaska, was reported to have easily passed what Lockheed engineers described as "the most rigid cold weather requirements ever imposed on any airplane."

The engineers reported the plane's landing gear and wing flaps operated and propellers feathered satisfactorily even in the extreme cold of 57 degrees below zero, and that the engines were started without pre-heating even after the airplane had been left parked in the open all night. Hydraulic systems operating the retractable landing gear and boosting surface controls continued to function and cabin temperatures were maintained successfully.

Causes of 'Panel Panic'

Limited human capabilities are necessitating increasing reliance upon automatic controls for aircraft, the National Aeronautics meeting of the Society of Automotive Engineers was told at its opening session in New York last week.

Hugo Schuck and Gordon Volkman, of Minneapolis-Honeywell Regulator Co., said the modern plane's bewildering arrays of indicators and gages, of switches and levers, coupled with its tremendous speed, extreme size and decreasing stability, could be described as logical causes of "panel panic" whereby pilots can become rattled at critical times.

Automatic controls were said to handle engines, flight, navigation and even traffic control better than humans and without fatigue or error. High engine efficiency, they reported, requires more precise control than a busy human pilot can provide.

Simplified Instrument Panel Sought

A project combining psychology and engineering to simplify aircraft instrument panels is being undertaken by the University of Illinois.

The Office of Naval Research is providing the funds and will do the engineering. The psychological phase will be carried on by Prof. Alexander C. Williams, Jr., former naval air officer and now research assistant professor in psychology. Instructions are to "forget all about present instruments and start all over with a blank panel," to answer the questions: "What does the pilot need to know?" and, "What is the easiest and quickest way to tell him?"

Drastic Action Asked To Fit Airplane Seats To Varied Size Riders

Something bordering upon the drastic must be done to make airliner chairs more comfortable for passengers varying in size, shape and disposition, in the opinion of Charles W. Morris, of Doak Aircraft Co.

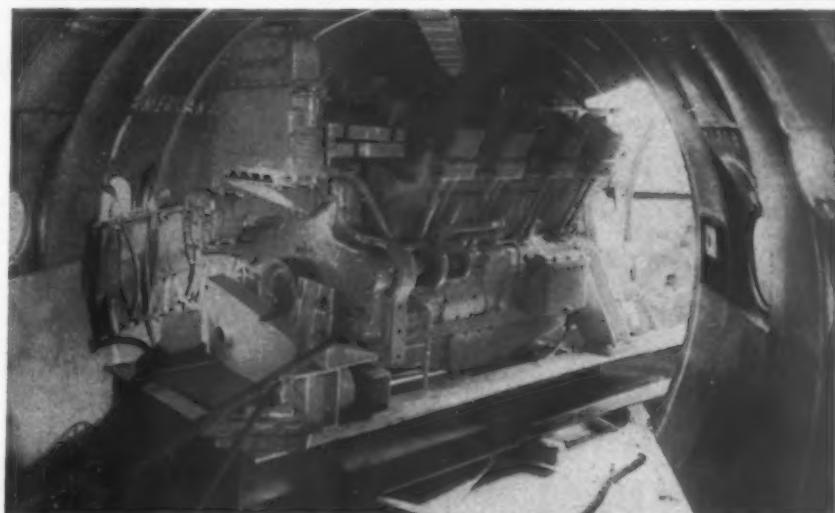
Morris, speaking before the National Aeronautics meeting of the Society of Automotive Engineers in New York, said that as airline speeds increase, flight lengthens and sleeper planes are less frequently used, passengers grow dissatisfied with "two-hour comfort."

He recommended studies of applied anatomy, physiology and kinesiology as helpful in solving one of mankind's oldest problems, seating comfort, currently aggravated and complicated by airline operations. He characterized the ideal airliner chair as one which provides equal comfort for tall and short passengers, permits relaxation and even slumber without annoying aftermaths, and counteracts the present embarrassing tendency of skirts and shirttails to "hike up."

Adjustable Chairs

Morris proposed the use of adjustable chairs having seat heights approximately of 17 inches, widths of 20 inches, lengths approximately 20 inches with a concave front edge to accommodate both short and long legs, and arm rests which can be set for comfortable heights.

"We are seeking," he said, "the advantages offered by the reclining-back Morris chair of past days and the time-tried rocking chair without including the disadvantages of either."



Heaviest Cargo—An 11,000-pound Diesel engine, the heaviest one-piece of freight ever carried by the Contract Air Cargo Division of American Airlines was recently loaded in St. Louis for Salvador, Central America. Clearing customs at New Orleans, the air freighter took on a 6,000-pound generator, 27 head of sheep, and some merchandise.

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New Minimums Set For ILS Approaches

Scheduled airlines using the Instrument Landing System are now permitted by the Civil Aeronautics Administration to operate under lower ceilings and visibility on straight-in approaches. Airlines meeting CAA requirements as to equipment and pilot familiarization programs may make such approaches when the ceiling is 100 feet below present minimums and when visibility is one-quarter mile less than present regulations require.

After an airline has had six months of satisfactory ILS experience, its ceiling minimum may be dropped another 100 feet and permissible visibility reduced another quarter-mile.

Experience may demonstrate that still further reductions can be safely made, but the CAA has no immediate plans for reducing ceilings below 200 feet or visibility below one-half mile at any field. CAA emphasizes that the new ILS minimums will apply to straight-in approaches only, and will have no effect on landing minimums now applicable to ordinary instrument approaches where circling is necessary to land on the proper runway.

As of Mar. 24, CAA reported that ILS systems were in operation at 36 selected airports, with several others about ready to be commissioned.

Plans for Emergency Use Of GCA Given TWA Pilots

Procedures for emergency use of 12 Army and Navy GCA (Ground Controlled Approach) landing systems reaching from coast to coast have been announced to Transcontinental & Western Air flight personnel in a bulletin from Paul S. Frederickson, superintendent of flying.

The action, believed to be the first by any airline toward immediate utilization of these service facilities, followed weeks of consultation between TWA's four regional chief pilots and Army and Navy officials. Frederickson emphasized to pilot personnel that CAA has never approved GCA landings for regular scheduled operations, but that use of the radar low-visibility approach system was permitted under the pilot's emergency authority.

Honolulu Run Poplar

United Air Lines quickly discovered the kind of run veteran pilots like to fly when it put its first San Francisco-Honolulu schedule, due to start May 1, up for bids under the line's seniority agreement. The old timers pounced on it and practically every pilot who thought he had a chance to make it put in a bid.

The winners were 3,000,000 milers like Harry Huking, Rube Wagner, Jimmy Johnson, Ralph Johnson, Clarence Hudson, Dick Bowman and R. T. Freng, who had seniority going back to the Post Office Department or predecessors of United. Only veteran missing from the list is E. Hamilton Lee, United's No. 1 pilot, who prefers to stay in Los Angeles. Reasons for the popularity of the Honolulu route: the Hawaiian sunshine and the regularity of schedules. The weather's practically always flyable and pilots lose little mileage pay through cancellations.

Civil Pilots May Use Military GCA Facilities in Emergency

Civil pilots whose planes are equipped for two-way radio communication are eligible to use Army and Navy GCA (Ground Controlled Approach) radar low-approach systems in emergencies, according to the Civil Aeronautics Administration. Pilots of private planes will talk directly to GCA operators on the standard frequencies of 3.105 or 6.210 megacycles, while directions from the GCA operators will be relayed by the local military control tower using a frequency between 200 and 400 kilocycles which any radio-equipped plane can receive.

Army and Navy GCA installations will be listed in the bi-weekly Airman's Guide, and each CAA traffic control center, control tower and communications station will maintain a list of operating hours and frequencies for GCA facilities in the region. After a pilot has declared an emergency and chosen a military field for a GCA set-down, CAA traffic controllers will give him an appropriate track to the field and whatever traffic clearance is necessary.



Engine Test Cell—A mechanic behind the observation window checks a Pratt & Whitney engine in Delta Air Lines' new \$100,000 engine test cell building at the Atlanta Municipal Airport. Two cells, one for P & W and one for Wright engines, are the first completed units of a million dollar expansion program started last fall. Noise reduction insulation muffles the roar at 50 yards, and completely silences it at 100 yards from the building.

AAF Plans Radar Coverage Over Entire Alaskan Airways

Army Air Forces has announced that it plans to install an all-radar airway in Alaska in "the immediate future." It will use war-developed radar navigational beacons known as "racon" at seven installations, providing radar coverage over the entire Alaskan airways now being used by aircraft of the Air Transport Command and civilian airlines operating between this country and Alaska.

This is said to be the first effort to provide radar coverage over an established continental air route, and will provide training and experience to pilots and communication technicians for the projected radar airways to be established within the U. S. The "racon" airway probably will be used only by ATC pilots, since it can be used only by aircraft equipped with airborne radar units.

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Air Transportation Institute

APRIL 22 through MAY 22, 1947

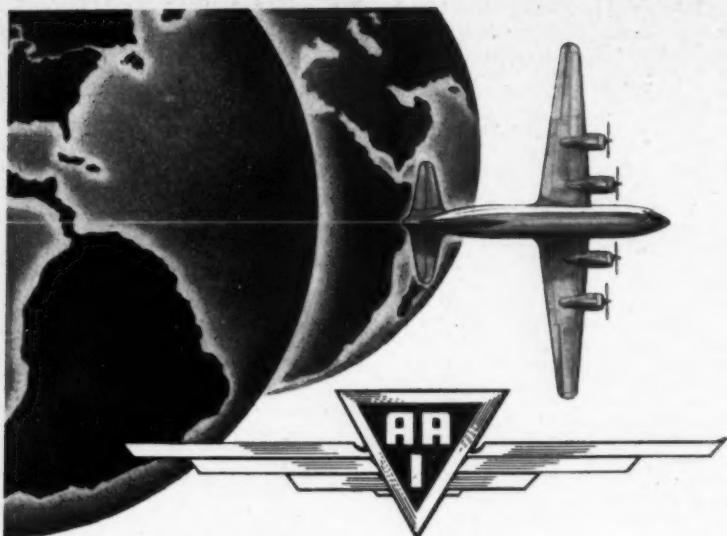
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By DAVID SHAWE

Things are going nicely with American Airlines' Contract Air Cargo Division—so nicely that CACD has hired out some maintenance to Boeing in Seattle rather than bring planes back from the Alaska run for service at CACD's base in St. Joseph, Mo. Two C-54's are used exclusively in this operation, mostly carrying foodstuffs and supplies for big construction jobs in Alaska.

The five other C-54's used by CACD are routed through St. Joseph for periodic service, but since this doesn't provide full-time work for a full-sized crew, CACD is running a substantial conversion center—rebuilding C-54's both for their own use and for independent operators.

While speaking of CACD, it may be of interest that pilots in this freight service are paid on the same scale as pilots in American Airlines' passenger operations. It is possible for them to pick up a little more money, however, because they seldom fly the same routes and thus get more expense money than a passenger pilot. It can be claimed that they earn a little extra, what with irregular hours and with a lot of work on the ground supervising loading and unloading.

Fairchild is changing from heat exchangers to combustion heaters on the C-82 Packet—not because of any complaint against the efficiency or service life of the heat exchangers, but because the air scoops were dragging too many m.p.h. from the performance of the airplane.

The project which Airquipment Co. undertook for United Air Lines to investigate using a hydraulic driven compressor and expansion turbine refrigeration system has been dropped as far as the DC-4 is concerned. Airquipment decided that the cost of such a cooling system would be "much too high."

Other airlines have been tinkering with various ideas for making the DC-4 more comfortable in hot weather while on the ground and during climb and descent. PCA has run some tests on a dry ice-and-alcohol cooling system which will weigh 300-400 pounds and can be installed without much difficulty, but the project isn't completed yet. Douglas Aircraft Co. has recommended a number of hot-weather modifications but airlines which didn't order parts months ago aren't likely to get them.

Airlines have found that to keep a DC-4 flying it takes 2.5 hours of maintenance to every hour required for the DC-3. They'd like to have someone work out a factor showing how much time and expense to allow for the DC-6, CV-24, Martin 202 and Boeing 377.

Airlines which have started running test and training flights with the DC-4 already are worried because the leading edge of the wing seems to scratch and dent quite easily during refueling. Although the airlines have been inclined to blame this on the 75-S Alclad used on the DC-6, Douglas Aircraft Co. says the characteristics of the material are about the same as the old 24-S. Douglas blames the denting and scratching simply on the fact that airlines are used to the protection of a de-icer boot which is lacking on the DC-6 thermal heated wing.

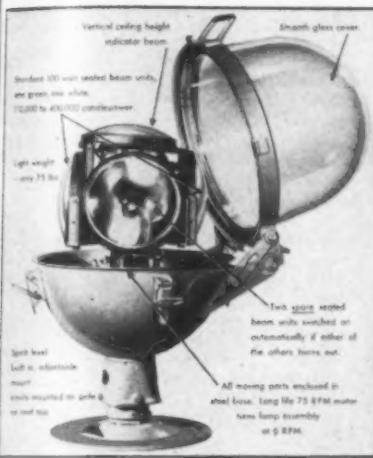
AMERICAN AVIATION

New Equipment

New Rotating Beacon

The illustrated rotating beacon unit has been placed in production by Line Material Co., East Stroudsburg, Pa., to meet the requirements of smaller airports for a low-cost beacon.

Mountable on either poles or rooftops, the two standard 100-watt sealed beam units produce 200,000 candle-

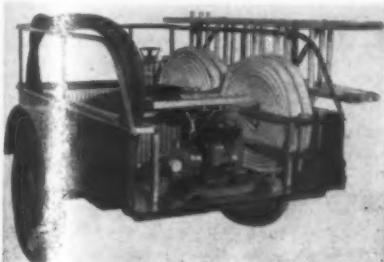


power on rated voltage and can give over 400,000 candlepower for emergencies by means of taps on the transformer which allow 20% over-voltage operation. If one sealed beam unit burns out the other is automatically switched on. An addition lamp, set at five degrees from vertical, serves as a locator beam and ceiling height indicator.

The lamps and the low speed motor requires 325 watts for operation. Efficiency is reported to be in excess for proposed minimum CAA requirements. A new bulletin, "L-M Rotating Beacon for Class I and II Airports," will be mailed on request.

Portable Firefighting Unit

This "Porto-Pumper" trailer unit, designed for low-cost fire protection, includes a gasoline driven high pressure utility pump, 75 feet of supply hose and 250 feet of fire hose, an 18 foot extension ladder, fire axe and hand type extinguisher. Cost is reported by the manufacturer to be about



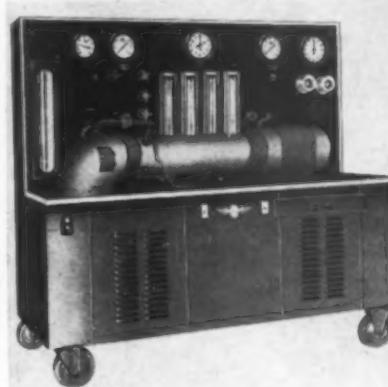
one-fifth that of the minimum fire fighting-pumping unit now on the market.

Overall length of the trailer unit is 118 inches; width is 66 inches. The five horsepower gasoline pump motor

will deliver over 40 gallons of water per minute at 120 pounds pressure. Manufactured by Porto-Pumper, Inc., 227 Iron St., Detroit 7, Mich.

Cabin Heater Test Machine

This cabin heater test machine, completely self-contained and fully equipped for all test operations, has been designed by Greer Hydraulics, Inc., 454 18th St., Brooklyn 15, N. Y. Features include adapters for mounting various models of cabin heaters,



accurate temperature and pressure indication by manometers and gauges accurate to within 2%; a pressure feed system to simulate actual operating conditions, and capacity up to 1000 cfm air flow at 12 in. of water at 70 degrees F. and 1800 rpm. The unit is designed to be fully explosion and fire proof.

Intava Activities to Terminate

Standard Oil Co. (New Jersey) and Socony-Vacuum Oil Co. announced they would terminate by the end of 1948 the agreement which they have jointly provided aviation products and services throughout the world outside of the United States.

Under these plans, which would not affect existing contracts or services, the activities of Intava, Inc., the jointly owned management and service affiliate of the two companies, will be terminated over approximately a two-year period. During this time, facilities and services will be absorbed by marketing affiliates of either of the two parent companies who thereafter will conduct aviation business independently.

AIR Establishes West Coast Branch

Airborne Instruments Laboratory, Inc., of Mineola, N. Y., has established a field branch laboratory at Hangar 3, 2627 N. Hollywood Way, Burbank, Calif., with Robert D. Martin, until recently a commander in the electronics branch of the Office of the Chief of Naval Operations, in charge. Primary purpose of the new establishment is to maintain closer liaison between the Mineola office and West Coast aircraft manufacturers.

Operations-Maintenance Personnel

Richard V. Moss has been promoted to station manager at Rutland, Vt., for Colonial Airlines. Robert L. McNally has been shifted from station manager, Reading, Pa., to same position, Syracuse, N. Y. Norman J. Phillion, former station manager in Rutland, replaces McNally at Reading.

W. K. Mickelson, who joined American Airlines as operations agent in Detroit in 1939, has returned from military leave to his post as passenger and cargo service supervisor in Washington.



Furman

Robinson

H. W. Furman, manager of United Air Lines' employee suggestion conference for the past 2½ years, has been appointed passenger service manager at Los Angeles. In other staff changes, C. C. Robinson has been assigned passenger service manager at Portland, and Willis M. Stockam has been promoted to superintendent of supply at Chicago. Robinson is a 16-year veteran with UAL and since 1945 has been superintendent of supply at Chicago. Stockam joined the company in 1931 and has been serving as assistant to Robinson.



Davies

Lowen

Wilfred W. "Bill" Davies, who joined United Air Lines as a draftsman in 1933, has been appointed acting director of engineering to succeed W. C. Mentzer, recently elected regional v.p.-operations. For the past two years, Davies has been superintendent of aircraft planning.

Charles J. Lowen, Jr., former district general manager for Capital Airlines at Pittsburgh, has been named assistant to the director of operations.

B. G. Culpepper, former assistant flight dispatcher for United Air Lines at Denver, has become flight superintendent of Empire Airlines.

Ellmore Resigns from Arinc

Enoch L. Ellmore, director of purchasing for Aeronautical Radio Inc., has resigned to become vice president of National Electronics Laboratories, Inc., Alexandria, Va. His new association permits him to continue his interest in aviation in an allied capacity through his organization's electronic and communications laboratory.

Classified Advertising

The rates for advertising in this section are as follows: "Help Wanted," "Positions Wanted," "Aircraft Wanted or For Sale," and all other classifications \$1.00 a line, minimum charge \$4.00. Estimate bold face heads 30 letters and spaces per line; light body face 40 per line; box numbers add two lines. Terms, cash with order. Forms close 20 days preceding publication date. Rates for display advertisements upon request. Address all correspondence to Classified Advertising Department, AMERICAN AVIATION PUBLICATIONS, 1317 F Street N. W., Washington 4, D. C.

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10 VHF Omni-Directional Receivers Delivered to CAA

Aircraft Radio Corporation of Boonton, N. J., has announced delivery to the Civil Aeronautics Administration of 10 of the newly-developed Type 15 Very High Frequency omni-directional range radio receiving systems.

The new systems are being installed in the CAA's fleet of regional inspection aircraft, so that CAA communications specialists can check orientation and general operation of all new omni-directional Range stations now being commissioned by CAA for navigational use by aircraft.

Under its 1947 program, the CAA plans to activate 288 VHF radio range stations, 218 of the omni-directional type.

Matthews Joins Luttrell & Senior

William M. Matthews, former CAA senior air carrier maintenance inspector, has joined Luttrell & Senior, Inc., aviation consultants, as director of international field maintenance. He will work from the firm's Washington offices.

HELP WANTED

CHIEF ENGINEER for newly established light aircraft manufacturing plant located in southeast U. S. Knowledge of French required. Box No. 561, American Aviation, 1317 F St., N. W., Washington 4, D. C.

Airport Manager, Springfield, Illinois. Salary \$4500-6500. Written applications only, prior to May 5, 1947. Springfield Airport Authority, 207½ South Sixth St., Springfield, Illinois.

POSITIONS WANTED

FLIGHT INSTRUCTOR with ATR, 8446 hours all types, Cubs to DC-4's, 2240 hrs. multiengine. Specialist as multiengine instructor for instrument, ATR & HPR, desires position with established company or individual, available immediately. Write or wire: Box No. 560, American Aviation, 1317 F St., N. W., Washington 4, D. C.

ART THRUN is interested in making another long term affiliation in Aviation Radio with a progressive and reputable company who can advantageously use his more than 18 years of pilot, receiver design and domestic/foreign sales engineering experience. Box No. 562, American Aviation, 1317 F St., N. W., Washington 4, D. C.

Keif Heads Aviation Committee

Aubrey Keif, manager, aviation division, The Texas Company, New York, has been named chairman of the Aviation Advisory Committee to the American Petroleum Industries Committee of the American Petroleum Institute for the year 1947. L. A. Henry, manager, aviation sales, Standard Oil Co. of Indiana, has been elected vice chairman for the same period. A. T. Hapke, of the aviation division of the American Petroleum Institute, will be secretary of the group, which is composed of heads of aviation departments of petroleum refiners and marketers.

Function of this group is to study and advise on taxation of aviation petroleum products and legislation affecting sale and distribution of these materials to airlines, aircraft and aircraft engine manufacturers, and airport operators.

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Army, G. E. Research Aimed at Dispersing Fog

The Army Signal Corps and General Electric Co. are embarking on an extensive weather research program designed primarily to disperse fog and clouds over airports.

The project was announced in New York by Brig. Gen. Jerry V. Matejka, commanding general of the Signal Corps at Ft. Monmouth, N. J. and Dr. C. G. Suits, v.p. and director of General Electric's research laboratory at Schenectady.

Under the program the Ft. Monmouth Air Weather Service will make a study of cloud modifications as they apply to the military; the AAF weather detachment at Newark Airport will fly B-29's to test the techniques, and General Electric will provide counsel and instruction, but will not take part in the flight program.

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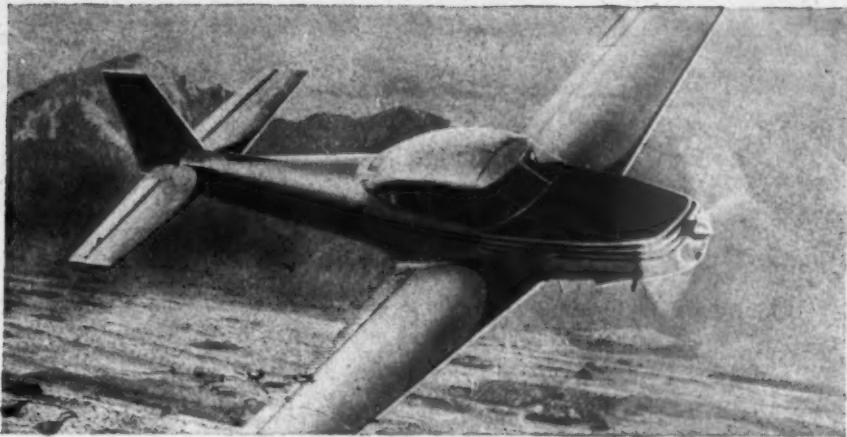


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loop, or with a plug-in outside antenna. There's a built-in speaker, or you can plug in earphones when you prefer. And the power can be AC, DC or the self-contained batteries.

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